

For Reference

NOT TO BE TAKEN FROM THIS ROOM

For Reference

NOT TO BE TAKEN FROM THIS ROOM

Ex libris
UNIVERSITATIS
ALBERTAENSIS



THE UNIVERSITY OF ALBERTA

AN EVALUATION OF OPEN AREA SCHOOL DESIGNS
FOR 16 MM MOTION PICTURE UTILIZATION

By



Brent William Pickard

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE
OF MASTER OF EDUCATION

DEPARTMENT OF SECONDARY EDUCATION

EDMONTON, ALBERTA

SPRING, 1970



Digitized by the Internet Archive
in 2022 with funding from
University of Alberta Libraries

<https://archive.org/details/Packard1970>

UNIVERSITY OF ALBERTA
FACULTY OF GRADUATE STUDIES

Thesis
1970
100

The undersigned certify that they have read, and
recommend to the Faculty of Graduate Studies for acceptance,
a thesis entitled "An Evaluation of Open Area School Design
for 16 mm Motion Picture Utilization" submitted by Brent William
Pickard in partial fulfilment of the requirements for the degree
of Master of Education.

ABSTRACT

The purpose of the study was to identify problems, resulting from the lighting and acoustical control facilities, in open area elementary schools, which would have consequences for 16 mm motion picture presentations. Based upon the interpretation of data from an opinion survey, recommendations, which might be incorporated into present and future open area designs were proposed.

The population included 135 certified teachers teaching in the open areas of elementary schools (1969-1970 school year) built by the Edmonton Public School Board between 1966 and 1968. The selected schools were grouped into four design categories. These were: rectangular original (five schools), circular original (four schools), rectangular additions (four schools) and circular additions (two schools).

Each school was visited to determine the existing conditions of the selected factors of open area school design (lighting controls, acoustical controls, electrical outlets). An opinion survey was designed and tested. Its purpose was to ascertain the teachers' evaluation of the selected factors of design which may have consequences for 16 mm motion picture presentation. The 16 mm motion picture medium was selected as being representative of audiovisual media in that it has a projected image, requiring lighting control and an amplified sound track requiring acoustical control.

Ninety-seven (71.8 per cent) of the opinion surveys distributed

were completed and returned. Responses to the surveys were analyzed by a non-parametric computer program. Data from a group of questions which suggested possible alterations or innovations to open area design were subjected to chi square analysis to determine if the responses obtained were statistically significant.

Analysis of the responses supported the conclusion that teachers in open area elementary schools were divided in their evaluation of the adequacy of the selected factors of environmental design relative to 16 mm motion picture presentations (44.2 per cent satisfied, 45.9 per cent dissatisfied). Teachers in circular original schools were most satisfied with the selected design factors in their open areas (56.0 per cent). Teachers in addition open areas were least satisfied with their facilities (50.3 per cent).

Accepted and supported recommendations for alteration in open area design, based upon the responses of the teachers, included: incorporation of a wireless listening center device to enable students, wearing headsets to listen to an otherwise amplified sound track, inclusion of floor to ceiling, fireproof and opaque drapes which could be drawn around a teaching station during media presentations, installation of rheostat controls for artificial light dimming, addition of acoustic tile to bare walls, and redesigning artificial light switches to permit greater lighting control flexibility.

ACKNOWLEDGEMENTS

The writer welcomes the opportunity to acknowledge and sincerely thank several individuals whose contributions were instrumental in the completion of this study.

To the teachers and principals of the participating schools for their time and interest in the study.

To Mr. A. Lust for his encouragement and friendship.

To Mr. D. Cooney for his interest and guidance at the outset of the research project.

To Dr. E. Mansfield and his staff for their cooperation.

To Dr. C. Bumbarger and Dr. J. LaFollette for their guidance, assistance and suggestions throughout the investigation.

To Dr. K. L. Bowers for his confidence, counsel and advice throughout the writer's masters program, especially during the investigation.

To my wife, Dianne, whose patience, faith and encouragement made everything possible.

TABLE OF CONTENTS

CHAPTER

I.	INTRODUCTION	1
	Introduction to the Problem	1
	Need for the Study	4
	Statement of the Problem	5
	Definition of Terms	7
	Basic Assumptions	10
	Delimitations of the Study	10
	The Significance of the Study	11
	The Organization of the Study	11
II.	A REVIEW OF RELATED LITERATURE	13
III.	DESIGN OF THE STUDY	29
	Selecting the Population	29
	Designing the Opinion Survey	30
	Collecting the Data	33
	Treatment of the Data	35
IV.	THE PILOT STUDY	37
	Rationale for Conducting the Pilot Study	37
	Procedures Used for the Pilot Study	38
	Findings of the Pilot Study	39
	Summary	41
V.	REPORT OF FINDINGS FROM THE PERSONAL VISITATIONS	42
	School System Requirements for Open Area Designs . .	42
	Lighting Controls	42

Electrical Switches	43
Electrical Outlets	44
Acoustic Controls	44
Rectangular Original Designs	44
Design I (Delwood-Westbrook)	45
Design II (York)	45
Design III (Richard-Secord)	46
Design IV (Greenfield).	46
Circular Original Schools	48
Design V (Afton, McKee, Brightview)	48
Design VI (Kildare)	49
Open Area Additions to Existing Self Contained Schools	49
Design VII (Mee-Yah-Noh)	51
Design VIII (Rio Terrace)	51
Design IX (Forest Heights)	52
Design X (Waverley)	52
Design XI (Princeton)	53
Design XII (Elmwood)	53
Summary	54
VI. REPORT OF FINDINGS FROM THE SURVEY INSTRUMENT	56
General Information	57
Lighting Controls	57
Natural Lighting Controls	57
Artificial Lighting Control	61
Electric Light Switches	67
Summary	71

CHAPTER

PAGE

Acoustical Controls	72
Summary	84
Electrical Outlets	85
Summary	87
Analysis by Teacher Information	88
Years of Teacher Training	90
Total Years of Teaching Experience	90
Total Teaching Experience in Open Area Schools . .	93
Completion of an Audiovisual Communications Course	97
Present Enrolment in an Audiovisual Communications	
Course	97
The Average Number of Times Teachers Used the	
16 mm Motion Picture Projector Per Week	100
Age of the Respondents	107
Evaluation	110
Organization	115
Innovation	117
Assumption	128
Summary	132
Lighting Controls	133
Acoustic Controls	133
Electrical Outlets	134
Teacher Information	134
Evaluation	134
Organization	135

CHAPTER

PAGE

	Innovation	135
	Assumptions	136
VII.	SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS	138
	Procedures Summarized	138
	Conclusions	140
	Problems Identified	144
	Recommendations, Based Upon the Findings, for Open Area Design Modifications and Changes	146
	Summary	148
	BIBLIOGRAPHY	149
	APPENDICES	154

LIST OF TABLES

TABLE		PAGE
I.	Pilot Study Reliability Check	40
II.	Existing Conditions of Selected Design Factors for Rectangular Original Designs	47
III.	Existing Conditions of Selected Design Factors for Circular Original Designs	50
IV.	Existing Conditions of Selected Design Factors for Open Area Additions to Self Contained Designs .	55
V.	Percentage of Opinion Surveys Returned	58
VI.	Natural Lighting Control	58
VII.	Ventilation and Natural Lighting Control	60
VIII.	Moveable Partitions	62
IX.	Adjacent Hallway Artificial Light	63
X.	Adjacent Teaching Station Artificial Light	64
XI.	Adjacent Fluorescent Lighting for Student Note Taking	65
XII.	Incandescent Spot Lights for Student Note Taking .	66
XIII.	Teaching Station Lighting Controls During 16 mm Motion Picture Presentation	67
XIV.	Convenience of Electric Light Switches	69
XV.	Electric Light Switch Identification	70
XVI.	Flexibility of Artificial Lighting Control	71
XVII.	Summary of Light Control	72
XVIII.	Adequacy of Carpeting During 16 mm Motion Picture Presentation	73

TABLE

PAGE

XIX.	Moveable Partitions as Acoustical Barriers	75
XX.	Acoustical Controls During 16 mm Motion Picture Presentation	76
XXI.	Teaching Station Acoustical Controls for 16 mm Motion Picture Presentation	77
XXII.	The Adequacy of the Teaching Station for 16 mm Motion Picture Presentation	78
XXIII.	Acoustical Controls for Adjacent Teaching Stations.	79
XXIV.	Acoustics and Open Area Shape	80
XXV.	Acoustic Ceiling Tile	81
XXVI.	Reverberation in the Open Area	82
XXVII.	Adequacy of Existing Acoustical Controls for 16 mm Motion Picture Presentation	84
XXVIII.	Summary of Responses to Acoustical Control Items .	85
XXIX.	Number of Electrical Outlets	86
XXX.	Convenience of Electrical Outlets	87
XXXI.	Summary of Responses to Electrical Outlet Items . .	88
XXXII.	Teacher Response by Years of Teacher Training . . .	91
XXXIII.	Teacher Response by Total Years of Teaching Experience	94
XXXIV.	Teacher Response by Total Teaching Experience in Open Area Schools	97
XXXV.	Teacher Response by Total Teaching Experience in the Present School	99

TABLE	PAGE
XXXVI. Teacher Response by Completion of an Audiovisual Communications Course	102
XXXVII. Teacher Response by Present Enrolment in Audiovisual Communications Courses	105
XXXVIII. Teacher Response by Average Number of Times per Week Teachers Used the 16 mm Motion Picture Medium	108
XXXIX. Teacher Response by Age of the Respondents	111
XL. The Adequacy of Lighting and Acoustical Control for 16 mm Motion Picture Presentation	113
XLI. Comparison of Selected Design Factors in the Teaching Station and the Self Contained Classroom for 16 mm Motion Picture Presentation	114
XLII. The Adequacy of the Teaching Station for Projecting a 16 mm Motion Picture When it is Educationally Justified	115
XLIII. Timetable Separation	116
XLIV. Timetable Combination	117
XLV. Moveable, Floor to Ceiling, Opaque Partition Innovation	119
XLVI. Listening Center Device Innovation	120
XLVII. Need for Increased Light Switch Flexibility	121
XLVIII. Partitions Hanging from The Ceiling Innovation	122
XLIX. Projection Room Innovation	123

TABLE

PAGE

L.	Rheostat Control Innovation	124
LI.	Venetian Blinds Between Glass Innovation	125
LII.	Opaque, Floor to Ceiling, Fireproof and Sound Absorbing Curtains	126
LIII.	Need for Better Quality Acoustic Materials in Teaching Station Construction	127
LIV.	Need for Acoustic Tile on Bare Walls	128
LV.	Assumption Check I	129
LVI.	Assumption Check II	130
LVII.	Assumption Check III	131
LVIII.	Assumption Check IV	132

CHAPTER I

INTRODUCTION

I. INTRODUCTION TO THE PROBLEM

Our rapidly changing society creates changes in education which lead to research and discussion. More knowledge must be mastered by more students. Curricula are constantly being updated. Teachers must have better qualifications. School boards must provide more facilities at an increasing rate. Learning theories and methods of instruction are being revised as educators and psychologists become more aware of how people learn.

Attempts at solving educational problems are coming from many sources. One of the most effective sources of solution lies in our modern technology, specifically the adaptations of technology to education. As educational technology becomes more understood and more available, it will provide a greater service in the learning process. Acceptance of the role of educational technology is gradual. It can be noticed in the increased number of teacher education courses in this field, the increased interest of private industry to provide equipment and materials,¹ and in the changes in school architecture intended to facilitate new theories and methods of learning requiring

¹Szabo, W., "Planning Audiovisual Facilities," in Audiovisual Communications, Vol. 4, No. 1, February, 1970, p. 6.

educational media.²

The roles educational media play in instruction are undergoing a change. Formerly, stress was placed upon the hardware, that is, the machines and equipment required to project an image on a screen or transform electronic impulses into audible sounds. Media have been a "... crutch to compensate for ineffective instruction."³ This situation is the result of several factors, some of which David Berlo has isolated. He states that with the tremendous complexity, resulting from changes in communication and perception theory, teachers and audiovisual personnel are forced to either rigidly adhere to one theory, producing limitations, or avoid theory altogether.⁴

The change educational media are undergoing is one of emphasis. Communication theory is emphasizing the role media can assume in learning with increasing concern for changing behavior as opposed to merely covering subject matter.⁵ This shift in emphasis extends into that 'science' of message design. It includes systems implementation of these new messages into the instructional program. The new role is one of complementing and supplementing the efforts of the teacher -- not replacing these efforts.

²Trump, J. Lloyd and D. Baynham, Focus on Change: Guide to Better Schools (Chicago: Rand McNally and Company, 1961).

³Hall, E. M. and L. A. Dennis, Living and Learning: The Report of the Provincial Committee on the Aims and Objectives in Schools of Ontario (Toronto: Newton Publishing Company, 1968) p. 126.

⁴Berlo, David K., "You Are in the People Business," in Audiovisual Instruction, Vol. 8, No. 6, June, 1963.

⁵Ibid.

With growth in media utilization and new teaching philosophies,⁶ school facilities and designs have undergone at least two transformations. The trends in new design include open areas for learning and instruction which replace conventional self contained classrooms. Instructional materials centers (IMC) containing all forms of educational resources have replaced the traditional library.

The contribution of educational media to the learning process is facilitated by a plant design that allows for convenient operation of media, increased student involvement with the resources at his disposal, and the necessary flexibility to alter the learning environment to suit the requirements of the learning situation.

The Edmonton Public School Board built their first open area elementary school in 1966. Since that time, twenty elementary schools, including open area additions to conventional facilities, have been built. Several original designs have been used. Some have been repeated with appropriate modifications included.⁷

Designs for these open area schools are the result of a great amount of study. The director of educational facilities and the director of design - research for the Board have conferred with several architectural firms in planning these schools. The various materials used in construction to control natural and artificial light, to control noise, to allow for portable storage space and to facilitate

⁶Trump and Baynham, op. cit.

⁷The McKee-Afton design provided the basis for later circular schools. See Appendix A, Part II.

media utilization have been studied. School board personnel have studied and observed several open area schools in the United States. Combined with their research, these first-hand observations led to the finalization of the open area designs used by the Board. The trend is to openness.⁸

II. NEED FOR THE STUDY

The difference between self contained designs and open area designs is that the latter do not have permanent and/or non-bearing walls in all or part of their construction. By removing walls, problems of provision for storage, tackboard and chalkboard facilities have developed. Partial solutions have been achieved by providing portable chalkboard-cupboard combinations and chalkboard-tackboard combinations. Problems of controlling natural and artificial light and noise, specifically during an audiovisual presentation, are more challenging. Solutions have included a reduction in the number of windows, flexible control of artificial light and acoustical treatment of walls and floors. It is now desirable to determine to what extent the design of the school facilitates audiovisual media utilization, as a means of evaluating the effects of these changes.

An exploratory study of the consequences for 16 mm motion

⁸Whereas some American plans had the IMC located in a self contained area adjacent to the open area, the Edmonton Public School Board altered the design and the IMC became part of the open area as in the Westbrook-Delwood design. See Appendix A, Part I.

picture utilization⁹ in open area elementary schools built by the Edmonton Public School Board can be justified by the following needs:

1. A review of the literature reveals that such a study has not been carried out.
2. The Edmonton Public School Board has expressed interest in findings of the study.
3. It is desirable for teachers to evaluate the physical facilities in which they teach.
4. This study may serve to illuminate some factors of design that could be altered to create a more satisfactory environment for media utilization in future open area designs.

III. STATEMENT OF THE PROBLEM

The problem of the study focuses upon the consequences for audiovisual media utilization, specifically 16 mm motion picture utilization, which result from some selected factors of open area school design.

The purposes of the study were:

1. To identify problems based on the data collected, in controlling light and sound for 16 mm motion picture presentations.

⁹See page 31 for the rationale for using the 16 mm motion picture medium as the criterion.

2. To identify problems, based on the data collected, in controlling light and sound for 16 mm motion picture presentations that relate specifically to the design in which the problems originated.
3. To make recommendations, based on the data collected, for changes in open area school design that could be adopted in future designs.

In this study an attempt was made to determine teacher opinion of the following questions as they relate to the open area elementary schools within the Edmonton Public School System.

1. Are present controls for natural light adequate for 16 mm motion picture presentations in the open area?
2. Are present controls for artificial light adequate for 16 mm motion picture presentations in the open area?
3. Are present acoustic controls adequate for 16 mm motion picture presentation in the open area?
4. Are existing electrical outlets convenient for 16 mm motion picture presentations in the open area?

In addition, analysis of the information received was made, relative to years of teacher training of the respondents, total years of teaching experience, total years of experience in an open area school, total years of teaching experience in the present school, completion of audiovisual communications courses, present enrolment in an audiovisual communications course, the average number of times per week the respondents used the 16mm motion picture medium and the age of the respondents to determine if any trends in responding could

be attributed to one or more of these factors of teacher information.

IV. DEFINITION OF TERMS

For purposes of this study, the following terms will be defined as indicated.

1. Educational Media: all materials used in school instruction (including print materials) and the equipment which facilitates them.
2. Audiovisual Media: all non-print sensory materials including 16 mm motion pictures, 8 mm motion pictures and motion picture loops, filmstrips, disc recordings, also audio tape recordings, video tape recordings, 2 x 2 slides, and overhead transparencies and the equipment which facilitates them.
3. Elementary School: any school in which grades one through six (inclusive) are taught.
4. Open Area School: a school in which all or part of the instructional area (excluding the gymnasium) contains no permanent and/or non-bearing walls. (Also termed cooperative teaching school or team teaching school).
5. Self Contained School: a school where all instructional areas (excluding the gymnasium) are divided by permanent and/or non-bearing walls. (Also termed traditional school or conventional school).

6. Instructional Materials Center (IMC): that part of the school where print and non-print resources (audiovisual media) are located, distributed and maintained and where teachers and students may find reference information.
7. Audiovisual Room: that part of the school where equipment that facilitates audiovisual media including projectors, tape recorders, phonographs and screens, are stored and distributed.
8. Projection Room: a self contained classroom originally designed for projection purposes, with adequate control of lighting and acoustics to allow for satisfactory audiovisual presentation. This area may or may not be adjacent to the open area.
9. Teaching Station: a portion of the open area that the teacher uses for small group, class size or large group instruction of students.
10. Self contained Classroom: a classroom "completely enclosed with walls in the conventional manner."¹⁰
11. Library: that part of the school where print materials are located and distributed.
12. Large Group: a combination of two or more classes for instructional purposes (e.g. lecture or demonstration).
13. Class: a group of twenty-five to thirty students gathered for instructional purposes.

¹⁰Fitzroy, D., and J. L. Reid, Acoustical Environment of School Buildings, (New York: Educational Facilities Laboratories, Incorporated, 1963), p. 16.

14. Small Group: a combination of two to fifteen students for instructional purposes (e.g., discussion).
15. Adequate: for purposes of this study those conditions equal to the teacher's requirements for satisfactory 16 mm motion picture presentation.
16. Natural Light: light from the sun that enters the instructional area through windows.
17. Artificial Light: light emanating from an electrical source.
18. Dimmer Switches: a type of control that will decrease or increase the illumination from a fluorescent or incandescent light source. (Also termed rheostat controls).
19. Utilization Practices: those activities necessary for effective audiovisual media presentations including preparation by the teacher, preparation of the classroom or teaching station, preparation of the students, presentation of the medium, summarization of the medium and follow-up of the medium.
20. Permanent Wall: a wall that is necessary for the support of the ceiling.
21. Non-bearing Wall: a wall that is not necessary for the support of the ceiling but which has been included for the purpose of dividing spaces in a school (e.g., dividing a large space into self contained classrooms).

V. BASIC ASSUMPTIONS

The following assumptions were made as the basis of this study.

1. It was assumed that audiovisual media, specifically the 16 mm motion picture medium, when utilized correctly, facilitate learning in a school environment.
2. It was assumed that the 16 mm motion picture projector and film are representative of the audiovisual media used by teachers in elementary schools in that this medium has a projected image requiring lighting control and an audible sound track requiring acoustical control.
3. It was assumed that it is important for teachers to take part in the evaluation of the physical facilities in which they teach.

VI. DELIMITATIONS OF THE STUDY

The study was limited by the following factors.

1. The information and conclusions derived were of the school year 1969 - 1970.
2. The information and conclusions derived have specific application only to those schools in the Edmonton Public School System included in the study.
3. Schools having an open area design being constructed or completed in the 1969 - 1970 school year and being occupied

for the first time during that school year have not been considered in this study.

4. No consideration was given to the organizational and attitudinal aspects pertaining to the audiovisual program in the schools studied.

The survey method of gathering data was utilized in this study. Therefore the inherent limitations of this method apply to this study, i.e., problem and bias of non response, misinterpretation by respondents and possible processing errors.¹¹

VII. THE SIGNIFICANCE OF THE STUDY

As a result of this exploratory study the Edmonton Public School Board will have additional information upon which to evaluate their open area elementary school designs in relation to audiovisual media utilization, specifically the utilization of the 16 mm motion picture medium. School planners can refer to the conclusions and recommendations of the present study when determining the facilities necessary for audiovisual media presentation in future schools. This study may serve as a model for future studies in other open area schools.

VIII. THE ORGANIZATION OF THE STUDY

The remainder of this study consists of six chapters. Chapter II is devoted to a review of related research and literature in the field of open area school design. In Chapter III, "Design

¹¹Good, C. V., Introduction to Educational Research, Second Edition, (New York: Appleton-Century-Crofts, 1963), pp. 275-276.

of the Study," the population, survey instrument development, procedures used and an explanation of the treatment of the data collected are described. Chapter IV addressed itself to a description of the existing conditions in the open areas of the selected schools determined by personal observation. Chapter V reports on the findings of the pilot study. Chapter VI is concerned with a description of the findings as established by analysis of the data collected by the survey. The concluding chapter offers a summary of the findings, outlines conclusions and offers recommendations based on the conclusions.

CHAPTER II

A REVIEW OF RELATED LITERATURE

Descriptions of experiments in school design are being published at an increasing rate.¹ Herman² views the classroom as a tool of instruction that must be redesigned periodically to achieve the best educational use. Trump and Baynham's³ work has precipitated such a trend.

Guide to Better Schools: Focus on Change⁴ was published in 1961 under authorization by a National Association of Secondary-School Principals commission. This guide provided a framework for meeting changed student needs, changed teacher needs, changed curricula, new financial priorities. The authors view the school building as reflecting and supporting the school's educational plan.⁵ They recommend flexible designs that offer easy conversion from large group to small group instructional spaces.⁶

¹Publications of the Educational Facilities Laboratories, Incorporated, New York, New York are one example.

²Herman, A. L., "Reflections on the Ugly Classroom," in Journal of Higher Education, Vol. 39, No. 7, October, 1968, pp. 376-387.

³Trump, J. Lloyd and D. Baynham, op. cit.

⁴Ibid.

⁵Ibid., p. 35.

⁶Ibid., p. 38.

"Several different kinds of spaces will be used for independent study. The largest will be the library reading room..."⁷

To accommodate the new instructional systems and revised emphasis in education, the open area school concept was developed. Some characteristics of open area schools can be identified.⁸ These tend to be general characteristics and subject to the instructional objectives, imaginations and finances of specific school boards. The primary characteristics include an open area for instruction and an instructional materials center (IMC) serving the school with instructional resources.

The open area⁹ is that area where students can be grouped or re-grouped in ways that satisfy their learning requirements at any specific time. These groups could be large groups, small groups, or simply individuals working by themselves.

Open classrooms are those which do not have complete closure. There may not be doors, or there may not be corridor walls of any type, there may not even be walls between classrooms. In other words, there is no substantial acoustical barrier between classroom units.¹⁰

Teaching stations in the open area are defined by moveable partitions or where the students' desks begin and end with portable dividers

⁷ Ibid., p. 39.

⁸ _____, "Designing Schools for Today's Children," in Educational Media, Vol. 1, No. 3, July-August, 1969, pp. 6-8; 40.

⁹ Ibid., p. 6.

¹⁰ Fitzroy and Reid, op. cit., pp. 15-16.

completely absent. Teachers may address groups ranging from two students to one hundred or more in such an area. When it is educationally justified, available audiovisual media are part of the instructional strategy in this area.

Educational media are located in and distributed from the instructional materials center. Print and non-print resources are located in the IMC for student and teacher reference. Study carrels and other equipment designed for individual use may be provided. These types of hardware satisfy the individual needs of students; however, their presence in an IMC depends upon financial and space considerations. The IMC is the 'learning hub' of the open area school. It may be part of the open area itself.

There are at least two functions of the open area. It is an instructional area where interaction between the "educational resources"¹¹ and the students occurs. A portion of the open area functions as a resource center for all the teachers and students in the school.

Since design of a building is creative, other aspects of the school structure (e.g., interior fixtures) are the result of the efforts of imaginative planners. These planners require an awareness of the educational plan which will ensure a functional plant. Design specialists must also be cognizant of the financial resources

¹¹This term refers both to teachers and the print and non-print materials they utilize.

available.

The elimination of permanent walls and the incorporation of open areas has met with varying degrees of acceptance by educators. Their views overlap into areas of school control, curricular emphasis, and pupil-teacher ratios.¹²

A review of related research and literature indicates the time and effort designers devote to school facility planning. Studies of designs in operation, of learner achievement in various designs plus reports of possible innovations in open area design construction are included in the existing literature.

Major issues of design were discussed at an architectural workshop conducted by the University of Michigan in 1959.¹³ The major issues included maturity and flexibility. Maturity "... refers to the stages in physical, mental and social growth of the student."¹⁴ It has been recognized that students develop at various rates physically, mentally and socially. Designers have a task similar to that of the curriculum planner. Designers must provide facilities to meet curricular objectives which reflect student needs. It is a challenge for designers to plan schools that allow the individual student to "self-actualize" and develop "self-initiative" and "responsibility."¹⁵

¹²Trump and Baynham, op. cit., pp. 14-18

¹³Eaton, L. K. and R. B. Lytle, New Schools for New Education, (New York: Educational Facilities Laboratories Incorporated, 1960).

¹⁴Ibid., p. 12

¹⁵Pearce, Lucia, "Environmental Structure: A Third Partner in Education," in Educational Technology, Vol. 8, No. 17, September, 1968, pp. 11-14.

Phenix¹⁶ points out that curriculum planners should strive to meet the individual needs of a student at a particular state in the student's development. It is the task of the teacher to combine the curriculum developed with the space planned to facilitate curricular objectives and thus provide meaningful learning experiences for the students.

The second issue, flexibility, refers to the ability of the physical plant to meet these individual needs and instructional goals. The Workshop determined that "flexibility" included the expansion of the building for future additions, the conversion of portions of the interior to meet changed needs of students, teachers and learning situations and the versatility of the building to lend itself to various learning tasks being carried on simultaneously, without interference.¹⁷ Green¹⁸ states that "... planners must recognize the impact of media on education and develop facility types that will support and extend their contribution to effective learning." These comments indicate that the emphasis on flexibility has resulted from the many changes in educational strategies, including the increased utilization of audiovisual media.

Schools constructed today are designed with various degrees of flexibility built in. A continuum exists from self contained areas to

¹⁶Phenix, P. H., "Curriculum", Philosophy of Education (New York: Hot, Rinehard and Winston, Incorporated, 1958), pp. 57-75 (Reprint).

¹⁷Eaton and Lytle, op. cit., p. 13

¹⁸Green, A. C. (ed.), Educational Facilities with New Media, (Washington, D.C.: Department of Audiovisual Instruction, National Education Association in Collaboration with the Center for Architectural Research, Rensselaer Polytechnic Institute, 1966), p. 3.

completely open areas.¹⁹ Schools have several resource centers, are built with one central resource center or contain outside areas for instruction. The reason for these types of facilities stems from new teaching methods, an increased concern for the importance of the individual and the realization of various capabilities and preferences. The varieties of teacher background, training and experience plus the existence of various types of learning materials are accounted for in planning schools that lend themselves to team teaching.²⁰ In this situation, designs facilitate combinations of educational resources that make the best use of those resources.²¹ Areas can be established for teacher planning, either individually or in teams. In some schools, areas have been provided for teachers to produce their own materials.²²

Conferences and studies have been conducted in the United States reporting the results of building design experiments. Some schools are windowless, whereas others have an abundance of windows. Teachers have commented on the use of glass in school construction. They state that glass can be "... pathway for acoustical leaks and, in addition, present serious problems in sun

¹⁹Gross, R. and J. Murphy, Educational Change and Architectural Consequences (New York: Educational Facilities Laboratories, Incorporated, 1968), pp. 18-38; 47-49.

²⁰Trump and Baynham, op. cit., pp. 47-48.

²¹Trow, W. C., Teacher and Technology: New Designs for Learning (New York: Appleton-Century-Crofts, 1963) pp. 114-147.

²²Gross and Murphy, op. cit., p. 76.

control."²³ Dillard²⁴ has determined several advantages of windowless schools. Among these he includes: freedom from glaring sunlight, comfort due to air conditioning, no glass breakage, freedom from outside distractions, ideal audiovisual environment and the addition of extra wall space for display purposes. Chritsen²⁵ reports a study which focused upon climate control. It is suggested that since the trend is toward using the school twelve months of the year, it may be advisable to install climate controlling equipment.

Included in several elementary school designs are open courtyards for outdoor education.²⁶ These courtyards may contain small pools to permit science projects (e.g., studying the life cycle of a frog), plots of soil for observing the growth of various plants and weather stations to give students first hand experience in recording climatic variations. Guerin²⁷ considers such areas as extremely important. Such "Instructional Experiences Service Centers" (IESC) provide students with "live experiences" which are transferable to previous or future symbolic experiences. The climate of the city in which such a facility is built greatly affects the amount of utilization it will receive.

²³Fitzroy and Reid, op. cit., p. 24.

²⁴Dillard, P. H., "No Windows Please...And Put It Underground?" in Audiovisual Instruction, Vol. 7, No.2, October, 1962, pp. 534-538.

²⁵Chritsen, F. T., "Study of Climate Control in Pinellas County Florida," in School Building Research: A Report of a Program held as part of the Building Research Institute, 1962 Fall Conference, Washington, D.C.

²⁶See Westbrook-Delwood design Appendix A, Part I.

²⁷Guerin, D.V., "Implications of the Communications Process for School Design," in Audiovisual Instruction, Vol. 12, No. 8, October, 1967, pp. 815-181.

A Winnipeg architectural firm has designed a prefabricated school. It was built by combining several steel components.²⁸ Such a method reduced construction time. The company stated that the initial production of the prefabricated units would be very costly because of the "tooling" involved. The initial costs would probably be borne by several interested school systems. Problems resulting from climatic changes would also have to be overcome. Developments related to these problems and problems of acoustical control were not reported.

Harriman²⁹ reports that to build flexibility into new school designs, greater costs will be incurred by taxpayers. It becomes necessary for the "school team" to "sell" the public by keeping them informed of design changes and the reasons, stemming from revised educational objectives, for these changes.

J. A. Shaver,³⁰ head of an architectural firm in Salina, Kansas, has isolated a cardinal principle in school plant planning. He states, "Build the school to fit the program." Space must be pliable, diversified, and easily re-shaped by the teachers who occupy and use that space.³¹ He points out that modern construction techniques allow the

²⁸ _____, "Prefab School Could Cut Construction Time," in School Progress, Vol. 35, No. 9, September, 1966, p. 67.

²⁹ Harriman, A., "Definition of School Facilities, Needs and Utilization," in School Building Research: A Report of a Program held as part of the Building Research Institute, 1962 Fall Conferences, Washington, D.C.

³⁰ Shaver, J. A., "Build the School to Fit the Program," in Audiovisual Instruction, Vol. 7, No. 2, October, 1962, pp. 518-521.

³¹ Ibid., p. 518.

building of "other shaped schools. Schools being built today may have a split-level interior,³² may be constructed as a combination of various pods,³³ may be basically circular³⁴ or the more traditional rectangular shape.³⁵

Considerable discussion centers on student achievement in open area schools. Findings of the few studies that have been conducted indicate little or no significant differences in achievement. However, other potentials of students seem to be developed to a greater extent in schools with open area designs. Tranter³⁶ conducted a study in selected Edmonton Public Elementary Schools during the 1968-1969 school year. His study was designed to detect variability in achievement in grade four and grade six pupils' reading, arithmetic and reference skills. Two traditional schools and two team teaching (open area) schools were used in the study. Tranter reported that achievement in reading and arithmetic varies slightly between students in traditional and team teaching schools. However his findings indicated reference skills for students in the team teaching schools are developed to a significantly higher level than for those students

³²In Edmonton Public Schools, Waverley Elementary School is an example. See Appendix A, Part III.

³³In Edmonton Public Schools, J. A. Fife Elementary School is an example.

³⁴In Edmonton Public Schools, McKee Elementary School is an example. See Appendix A, Part II.

³⁵In Edmonton Public Schools, Delwood Elementary School is an example. See Appendix A, Part I.

³⁶Tranter, R. D., "An Analysis of Team Teaching as Compared to Traditional Schools in the Edmonton Public School System," Unpublished Master's Thesis, University of Oregon, Eugene, Oregon, 1969.

in traditional schools. Tranter concluded that the instructional strategies used in team teaching schools, which were facilitated to some degree by the physical plant, appears to develop students' research and reference potential to a greater extent than in a traditional situation.

An environment case study published by the Architectural Research Laboratory, Department of Architecture, of the University of Michigan focused upon the effect of windowless classrooms on elementary school children.³⁷ This question was posed, "... If windows...are no longer needed for reasons of ventilation or day-lighting, then are they still desirable for other reasons?"³⁸ The case study included the behavioral reactions of both teachers and students. The study, taking nearly three years to complete, recorded these reactions in various situations. The three periods included: "(1) a school year in the existing fenestrated classrooms, (2) a full school year with all windows in the Hoover School (test school) removed and (3) at least half a school year with the windows in the test unit restored."³⁹ Conclusions from the study indicate that while "... some students did better in a windowless environment, some did worse, ... and some did the same as they did before ... no consistent pattern of pupil performance in going from one stage of

³⁷ _____, The Effect of Windowless Classrooms on Elementary School Children: Environmental Case Study, (Architectural Research Laboratory, Department of Architecture, University of Michigan, 1965).

³⁸ Ibid., p. 17.

³⁹ Ibid., p. 18.

the study to another has been detected that could be ascribed to the absence of an outside view."⁴⁰ The researchers also noted that "... no pattern of class behavior can be detected which would indicate that a view of the outdoors has been essential in the learning process for these particular youngsters."⁴¹ Teachers do prefer windowless classrooms for at least two reasons: children are no longer distracted and extra wall space is "... put to good instructional use."⁴²

The need for additional research in school environment has been emphasized by the Department of Architecture at the University of Michigan.⁴³ Present indications are that students receiving instruction in open area schools, tend to develop skills, attitudes and understandings not easily convertible to the traditional H, A, B, C, or D grade.⁴⁴

These types of school designs have implications for audio-visual media utilization. The teaching station is the basic learning area in the open area school. Definite conditions must exist for audiovisual media presentations to be effective. Natural lighting control, artificial lighting control and acoustical control are three factors which determine the effectiveness of mediated instruction.

⁴⁰Ibid., p. 49.

⁴¹Ibid.

⁴²Ibid., p. 55.

⁴³Ibid., pp. 54-55.

⁴⁴Tranter, op. cit.

The Michigan State Audio-Visual Association states,⁴⁵

"Light control in the classroom is just as important as any other aspect of classroom planning." This statement has a definite importance when planning open area facilities in which walls are non-existent.

This Association recommends the use of vision-strip windows in instructional areas. Natural lighting controls for this type of window are less expensive than for traditional size windows since the surface area of the former type is greatly reduced. They feel "... the governing factor in the cost of natural lighting controls is the size of the area to be covered and the provisions made for such installations in the architects' designs."⁴⁶

The United States Department of Health, Education and Welfare published a document⁴⁷ in 1961, outlining recommended practices to be followed in constructing school facilities. They isolated four methods to achieve acceptable standards of illumination from artificial light. These methods included: absorption, diffusion reflection and refraction. The Department stresses the importance of providing uniform levels of illumination. Glare or "... high

⁴⁵ _____, "Planning Requirements of the Classroom: Minimum Standards for Michigan," in Michigan Educational Journal, Vol. 41, No. 8, December, 1963, pp. 21-27.

⁴⁶ Ibid., p. 23.

⁴⁷ _____, Environmental Engineering for the School: A Manual of Recommended Practice (Washington, D.C.: United States Office of Health Education and Welfare, 1961).

brightness causing fatigue, discomfort or interference with the seeing task ..."⁴⁸ must be avoided. Fluorescent lighting provides diffused light. A type of 'egg-crate' system or luminous ceiling facility which shields the fluorescent tube from normal direct vision is necessary.⁴⁹

Miller includes some general specifications for lighting control in Media Canada: Guidelines for Educators. For small windows, "... full closure Venetian blinds with a matte finish and light absorbent surface should be installed."⁵⁰ Blackout drapes darken large window areas more efficiently than Venetian blinds.

Erickson has stated quite definite criteria for control of artificial lighting for audiovisual purposes. Generally "... classrooms need to be darkened to the point where only one tenth of one footcandle of illumination falls on the screen surface."⁵¹ A dimming system using rheostatically controlled incandescent lights shielded from the screen surface, will provide enough light for note taking.⁵²

Miller has noted the necessity of flexible artificial light

⁴⁸Ibid., p. 14.

⁴⁹Ibid.

⁵⁰Miller, J. E. (ed.), Media Canada: Guidelines for Educators (Toronto: Pergamon of Canada, Ltd., 1969) pp. 37-38.

⁵¹Erickson, C. W. H., Fundamentals of Teaching with Audio-visual Technology (New York: The Macmillan Company, 1965) p. 210.

⁵²Ibid., p. 195.

control. He states "... light switches should be installed so that each teaching area can be darkened sufficiently, either rear projection units or new parabolic screens (in developmental state) should be used."⁵³

Acoustic facilities necessary vary according to the educational purpose(s) an area has been designed to accommodate. Fitzroy and Reid determined several "... important variables which contribute to the acoustical situation ...".⁵⁴ These include: reverberation, intruding noise, noise reduction between classroom areas, absorptive floor coverings and the human factor. The Environmental Engineering Manual states that "... reverberation may be controlled ... by absorptive and reflective materials (such as drapes) and by acoustic tile applied to the walls and ceiling."⁵⁵

Erickson⁵⁶ reports that sound absorbing wall tile and ceiling tile plus carpets on the floors are desirable especially in open areas. All reports indicate the necessity of controlling noise emanating from outside the school in addition to noise within the school. They stress the need for acoustic tile or some comparable attenuating material on ceiling and wall surfaces. In schools with an open area design, additional acoustic materials, usually in the

⁵³Miller, op. cit., p. 38.

⁵⁴Fitzroy and Reid, op. cit., pp. 19-20.

⁵⁵_____, Environmental Engineering for the School, p. 8.

⁵⁶Erickson, op. cit., p. 210.

form of carpet on the floor in instructional areas, is recommended.

Audiovisual media are being utilized to greater extents as teachers become more aware of the tasks media can perform. "More and more electrical power will be required as more media come into use."⁵⁷ Media Canada states "... a minimum of two 15 ampere circuits per teaching area is required to meet present needs."⁵⁸ Erickson states a basic need of three double 2000 watt electrical outlets per classroom.⁵⁹ "In areas where study carrels are located, power outlets are to be not more than five feet apart. One 15 ampere circuit is required per two study carrels."⁶⁰

A continual appraisal of design innovation is necessary if the merits of experimental designs are to be known. Educational Facilities Laboratories, Incorporated, established by the Ford Foundation in 1958 to assist American Schools and colleges with their physical problems, endeavors to report design changes. Their reports are informative in nature and describe advantages and limitations of new designs. They include case studies and, in at least one

⁵⁷ Miller, op. cit., p. 38.

⁵⁸ Ibid.

⁵⁹ Erickson, op. cit., p. 195.

⁶⁰ Miller, op. cit., p. 38.

publication,⁶¹ try to evaluate the designs. The emphasis they place on school planning is one of cooperation between educators and architects to create functional plant designs. The objectives of the program to be followed in the plant must be considered the educational framework for the physical plant. "Form must follow function."⁶² Design must focus upon educational objectives. Spaces for learning must allow students access to the information they want to learn.⁶³ These spaces must be convertible to facilitate the use of various media which present this information. Such learning areas must be designed to meet behavioral objectives educators deem important when students work by themselves, work in small groups or receive a lesson from their teacher.⁶⁴

A review of the literature indicates a trend to experimental school designs which include open areas and resource centers. These designs reflect the new educational philosophies that have emerged in the last decade. Few quantitative studies dealing with open area designs have been reported. However, of those completed and reported, stress appears to have been placed on educational objectives and cooperation between educators and architects.

⁶¹Fitzroy and Reid, op. cit.

⁶²Shaver, op. cit.

⁶³A lecture by Dr. Donald Ely, January 28, 1970.

⁶⁴Ibid.

CHAPTER III

DESIGN OF THE STUDY

The primary purpose of this exploratory study was to determine the consequences for 16 mm motion picture presentation within open area schools. Teacher evaluations of some selected factors of school design were the measures of these consequences. This chapter describes the procedures used to carry out this study; selecting the population, designing the opinion survey, collecting the data and treating the data.

I. SELECTING THE POPULATION

The population included 135 certified teachers who teach in the open area elementary schools and open area additions to self contained elementary schools of the Edmonton Public School Board. All open area schools built and occupied between 1966 and 1968 were included. Schools under construction, being completed or being occupied for the first time in the 1969 - 1970 school year were excluded. It was deemed necessary that one year of school operation was required before meaningful evaluation could result.

The population was taken from seventeen elementary schools.¹ Eleven schools were placed in the "original" category since these schools all had original open area designs. Within this category,

¹One elementary open area addition, constructed for grades one to three and two schools under construction were excluded.

seven schools have basically rectangular open area designs.² and four schools have basically circular open area designs.³ Two schools in this category, with basically rectangular open area designs, were used in a pilot study.⁴ These two schools were excluded from the main study.

The remaining six schools were placed in the "addition" category since the open areas of these schools were additions to previously existing traditional plants. Four schools within this category have basically rectangular open area designs⁵ and two schools have basically circular open area designs.⁶

II. DESIGNING THE OPINION SURVEY

The survey addressed itself to four selected factors of school design and their consequences for 16 mm motion picture utilization in the open area. The selected factors of design included: natural and artificial lighting controls, acoustical control placement and the placement of electrical outlets.

The 16 mm motion picture medium was chosen as being representative of the audiovisual media teachers may use in open area elemen-

²See Appendix A, Part I.

³See Appendix A, Part II.

⁴Chapter IV contains a description of the pilot study.

⁵See Appendix A, Part III.

⁶See Appendix A, Part IV.

tary schools for the following reasons.

1. All schools studied had at least one 16 mm motion picture projector.
2. At one time or another, most teachers use the 16 mm motion picture medium as part of their instructional strategy.
3. Materials (i.e., 16 mm motion picture film) for the 16 mm motion picture projector are available to teachers in open area elementary schools from the school system's central Instructional Materials Center.
4. The 16 mm motion picture medium is representative of most audiovisual media used in the schools because it has a projected image which requires light control and a sound track which requires acoustical control.
5. The 16 mm motion picture medium is used in many areas of the elementary curriculum.
6. The character of open area environments necessitate that special considerations be given to lighting and acoustical control if the 16 mm motion picture medium is to be effective.

Specific items dealing with the stated selected factors of school design, with possible alterations to school designs, and with the basic assumptions of the study were developed. Introduction to Educational Research by Carter V. Good⁷ served as a useful reference in

⁷Good, Carter V., op. cit.

designing the instrument.

The survey required that respondents select one of the five possible answers rated: strongly agree, agree, disagree, strongly disagree and no opinion. Respondents indicated their response on an IBM answer sheet. Data from the answer sheets were transferred to IBM punch cards by the author.

The items of the survey were critically evaluated by five students in a graduate level audiovisual communications class, Education Audiovisual 562 - "Curricular Integration of Audiovisual Materials." Interested persons with teaching experience in open area elementary schools, but not presently teaching in such schools gave guidance in evaluating the survey. Central office personnel of the Edmonton Public School Board, including the supervisor of the central IMC, the director of educational facilities and research specialists within the Department of Educational Research also scrutinized the instrument. After the survey was examined by the thesis committee and a pilot study was conducted, a final revision of the survey took place.

Part I of the instrument⁸ used for the main study contained thirteen items on lighting control, eleven items on acoustical control and two items on the placement of electrical outlets. In addition three items referring to total evaluation, two items

⁸ See Appendix D.

relating to the school timetable, ten items suggesting possible design changes and four items serving as checks on the basic assumptions of the study were included.

Part II of the instrument was devoted to obtaining teacher information relative to the following classes: years of teacher training, total years of teaching experience, total years of teaching experience in open area schools, total years of teaching experience in the present elementary school, completion of audiovisual communications courses, present enrolment in audiovisual communications courses, average number of times per week, respondents used the 16 mm motion picture medium, age of the respondents, whether the open area they taught in was basically rectangular or circular and whether the school they taught in was an addition to a traditional design or an original design. Space was provided for comments. The forty-five item instrument was printed by the multilith process by the Department of Educational Research of the Edmonton Public School Board.

III. COLLECTING THE DATA

Collection of the data for the present study involved two procedures. Personal observations were made in December, 1969 to determine the state of the existing facilities of the participating schools. An information checklist⁹ was developed and used to record this information. A report of these findings is contained in Chapter V.

⁹See Appendix B.

In early January, 1970, the pilot study was conducted.¹⁰ The final opinion survey¹¹ was mailed to the fifteen schools included in the study by the Department of Educational Research of the Edmonton Public School Board on February 4, 1970. Accompanying the survey were three letters. The first letter¹² from the Director of Educational Research was directed to the school principals. It was a copy of an original letter sent to the Faculty of Education Laboratory Program Committee Executive Secretary approving the research project. The second letter¹³ was a covering letter to the school principals from the author of the present study. It explained the purpose and importance of the study. This letter also informed the principals that the completed instruments would be called for on February 13, 1970. The third letter,¹⁴ from the author of the present study to the teachers involved, accompanied each survey instrument. Its intent paralleled the second letter.

On February 9, 1970 a reminder letter¹⁵ was mailed to the school principals. Its purpose was to remind them that the completed survey would be called for on February 13, 1970. On February 12, 1970 a telephone call was made to ensure that the completed surveys would be ready to be picked up.

¹⁰See Chapter IV.

¹¹See Appendix D.

¹²See Appendix E.

¹³See Appendix F.

¹⁴See Appendix G.

¹⁵See Appendix H.

IV. TREATMENT OF THE DATA

Information from the personal visitation was organized into the following categories: original rectangular designs, original circular designs, rectangular addition and circular addition. Information relating to the existing facilities at the time of the visitations is summarized in Chapter V.

Data from the survey were transferred to IBM punch cards. Analysis, using a non-parametric program was completed by the University of Alberta IBM 360/67 Computer. A subroutine was designed by personnel of the Division of Educational Research Services, Faculty of Education and included in the basic program. Data from the pilot study were used to test the program and ensure that this program would serve the needs of the main study.

An analysis of each question was completed. This provided information that stated the number of persons who strongly agreed, agreed, disagreed, strongly disagreed or had no opinion relative to each item. All responses pertaining to each of the selected factors of design were grouped. An analysis was made to determine the consequences for 16 mm motion picture presentation in each school category relative to each group of design factors. Total responses for all items concerned with the selected factors of design were grouped. An analysis was made of these responses relative to the information categories given in Part II of the opinion survey, "Teacher Information."

The inclusion of statistical analysis was not the overall purpose of the present study. However, an attempt was made to determine if the responses the teachers recorded on the items referring to possible alterations or innovations in design were statistically significant or if they had occurred by chance. The innovation items were subjected to chi square analysis since the data from these items formed the basis of the recommendations of the present study.

CHAPTER IV

THE PILOT STUDY

This chapter reports on the pilot study conducted in January, 1970. The rationale for conducting a pilot study, the procedures used and the findings relevant to the main study are described.

I. RATIONALE FOR CONDUCTING THE PILOT STUDY

Several factors necessitated conducting a pilot study. A review of the literature proved quite conclusively that a study comparable in purposes and objectives to the present study had not been conducted. Any existing research into the factors of design, included in the present study, was concerned with the self contained classroom or a special instruction area.¹ A search for a survey instrument which would fulfil the purposes of the present study was unsuccessful. Therefore, an instrument that would provide a teacher evaluation of the selected factors of school design and their consequences for 16 mm motion picture presentation had to be developed.

It was not the stated purpose of this study to test the reliability and validity of the instrument developed. However, in order that usable results be obtained, attention was paid to these factors.

¹Heldman, Lawrence J., "Planning Elementary School Science Facilities," Unpublished Doctoral Dissertation, Columbia University, 1966, is an example.

The opinion survey was scrutinized by several groups of experts in the audiovisual and school design field. A reliability check, items four and ten, was built into the instrument. The wording is different for these two statements; however, each item refers to the same thing.

The prime reason for conducting the pilot study centered on the need to determine whether or not the instrument measured what it was intended to measure.

II. PROCEDURES USED FOR THE PILOT STUDY

On January 5, 1970, the survey was distributed from the Department of Educational Research to two open area schools. These two schools had been placed in the rectangular original category.² These schools were selected on the basis of their school population. Information from the Edmonton Public School Board indicated that both schools had enrolments below their designed capacity. These schools might reflect this fact in the findings of the main study. It was decided that these schools would serve the purposes of the pilot study.

The sample for the pilot included teachers teaching in the open areas of the two schools selected. Figures obtained from the principals indicated that fifteen teachers would be involved. Eight or 53.3 per cent of the surveys were completed and returned.

Surveys from one school were returned by mail. The surveys from the other school were called for by messenger.

²See Appendix A, Part V.

Respondents had been asked to evaluate and comment upon the items.

Information from the IBM Answer Sheets was transferred to punch cards. This information was used to assess the applicability of the computer programme selected and the sub-routine to this programme that was developed.

II. FINDINGS OF THE PILOT STUDY

Several findings of the pilot study affected the opinion survey and procedures used in the main study. The following include the pertinent findings of the pilot study.

1. The computer programme and sub-routine developed would fulfil the needs of the main study.
2. Refinement of the directions was necessary.
3. Surveys that were returned by mail were returned very slowly.
4. Items were interpreted by the respondents satisfactorily.
5. The check for reliability indicated that respondents were reacting to the items in a reliable manner. Table I summarizes the information from the reliability check.

Item four stated, "Light switches are conveniently located in the open area for you or your students to operate."³ Item ten stated, "Interior light switches are handy to operate."⁴ The

³See Appendix C.

⁴Ibid.

TABLE I
PILOT STUDY RELIABILITY
CHECK

Teacher Response	Category				Total	
	Item 4		Item 10			
	No.	%	No.	%	No.	%
Strongly Agree	2	25.0	1	12.5	3	19.8
Agree	3	37.5	4	50.0	7	41.6
Disagree	3	37.5	3	37.5	6	39.6
Strongly Disagree	0	0.0	0	0.0	0	0.0
No Opinion	0	0.0	0	0.0	0	0.0
Total	8	100.0	8	100.0	16	100.0

information from this table indicates that a similar percentage of the responses agree or strongly agree and disagree for each question. This further indicates that the respondents are answering in a consistent manner.

Decisions regarding the final instrument and procedures to be followed were made. The survey was divided into two parts. The first part was concerned with the teacher evaluation of 16 mm motion picture projection relative to the selected factors of open area design. The second part addressed itself to the teacher information deemed necessary to search for relationships between teacher characteristics and the responses to Part I. Both parts were answerable on the IBM Answer Sheet.

Arrangements were made to pick up the completed instruments for the main study. The time factor involved in returning the surveys by mail for the pilot study had resulted in delay and probably increased the number of surveys that were not returned.

IV. SUMMARY

This chapter described the rationale, procedures and pertinent findings of the pilot study. The pilot study was the basis for the final revision to the opinion survey and to the procedures followed in the main study.

CHAPTER V

REPORT OF FINDINGS FROM THE

PERSONAL VISITATIONS

This chapter is devoted to reporting the findings of the personal observations completed in late December, 1969. A visit to each school included in the present study was made to determine the existing conditions of the selected design factors. A statement of the Edmonton Public School Board requirements for open area designs, obtained from the Design-Research Department,¹ begins the description. General characteristics of each design category, unique features of each design within specific design categories and problems of the designs within each category are included.

I. SCHOOL SYSTEM REQUIREMENTS FOR

OPEN AREA DESIGNS

The Edmonton Public School System tends to regard each school design as unique. Encompassing and strict standards for some design factors (acoustic controls) do not exist. Experience in designing and building open area schools has provided those concerned with information and ideas which are incorporated into future schools.

Lighting Controls The open area designs are usually devoid of

¹Information obtained from a telephone conversation with Mr. E. Hannas, Design-Research Department, Edmonton Public School Board, February 10, 1970.

large windows in the instructional area (teaching stations). Some designs have large window areas in the instructional materials center. All window areas in the open areas must have some operable natural lighting control facility. Usually blackout curtains have been used in teaching stations. The present trend is to use Venetian blinds built between two panes of glass. In all open areas included in the present study, the existing natural lighting controls were operable at the time the school was visited.

Artificial light sources installed are designed to produce 100 footcandles of light at the desk level. The minimum requirement is 70 footcandles. Two types of fluorescent egg-crate light fixtures have been used. Some designs have these fixtures recessed into and flush with the ceiling. A type of fixture which hangs from the ceiling has been used in other designs. The latter type is less expensive. Both fluorescent fixtures attain the illumination requirements.

Electrical Switches The School Board requires that rows or clusters of fluorescent lights be controlled independently. Since 1966, the flexibility of these controls has increased. Location of electrical switches is subject to traffic flow and the number of possible places a switch panel can be located. In open areas the number of locations is limited by the absence of walls. Locations proposed by the electrical contractor are subject to revision and approval of the School Board.

None of the existing open area schools had rheostat controls. Two schools have a dial-push button light switch. Lights in one school are controlled directly from the circuit breaker switch box. The majority of the schools have a standard mercury switch.

Electrical Outlets The number of electrical outlets varies according to the purposes for which a particular portion of the open areas has been designed. The instructional materials center contains more electrical outlets than do the teaching stations to facilitate powered study carrels. Two or three electrical outlets per teaching station are desired. Due to the features of open area designs, specifically the absence of walls, the number of outlets may vary among teaching stations. Additional outlets have been installed in posts, which support the ceiling where they exist.

Acoustic Controls All open area schools have special acoustic treatment, usually in the form of carpeting and acoustical ceiling tile. The School Board suggests that the shape of the open areas has some effect on the acoustics of the area. The trend to use vinyl covered drywall panels, which replace concrete blocks as the wall materials, is an attempt to improve the acoustics in open areas.

II. RECTANGULAR ORIGINAL DESIGNS²

Five schools belong to the category of rectangular original

²See Appendix A, Part I for outlines of designs included.

designs. These schools were originally designed as open area schools. Their open areas are in the basic shape of a rectangle. Two schools have been built using Design I.

All schools in this Category have carpets and concrete block or plaster walls. Artificial lights are controlled in banks. There is at least one electrical outlet on the wall of any particular teaching station. Additional outlets have been provided in support posts and at floor level.

Design I (Delwood-Westbrook) Design I features the dial-push button artificial light control. Floor mounted electrical outlets have been provided. A large window area separates the IMC from the outside courtyard. No light control facility exists on this window area. Windows having a southern exposure are equipped with black-out drapes. No light control facilities exist on windows having a northern exposure. An attempt to remedy acoustical problems is revealed by the addition of acoustic ceiling tile to parts of the plaster ceiling. This tile was placed at regular intervals. Clusters of fluorescent lights, rather than rows, were used. Concrete blocks have been used for wall materials. Swingout study carrels, attached to some walls, have acoustic treatment which faces the open area when these carrels are closed.

Design II (York) In Design II, the ventilators are located close to the windows and blackout curtains. When drawn, these curtains could inhibit ventilation. Air blowing from the ventilator, or from the open window in warm weather, may decrease the effectiveness of the light control facility. All windows have light control. An excellent carpet is a feature of this open area.

Additional electrical outlets have been provided near the base of support posts. Acoustic ceiling tile has been used throughout the entire open area.

Design III (Richard Secord) This design has a large window area in the instructional materials center which reduces the effectiveness of the light controls. Self contained classrooms surround the instructional area. Strip windows located in the teaching stations, which look into the self contained classrooms, have no natural light control facility. Artificial light is controlled from the circuit breaker switch box. This box is located at one end of each group of teaching stations. The clusters of artificial light fixtures are controlled in banks and recessed into the ceiling. Additional electrical outlets are located in support posts. Acoustic tile has been used as the ceiling material. Concrete blocks have been used as the wall materials.

Design IV (Greenfield) Acoustic insulation has replaced acoustic ceiling tile in Design IV. This material acts as insulation for heating purposes as well as providing acoustic control. A 'lattice' ceiling frame houses the fluroescent lights. The acoustic insulation has been attached to the roof of the building approximately two feet above this lattice arrangement. Plastered walls and concrete blocks comprise the wall materials. Standard light switches have been used and additional electrical outlets have been provided in the support posts. The open area is windowless.

Table II serves to summarize the existing conditions of the selected design factors of the rectangular original designs included in the main study.

TABLE II

EXISTING CONDITIONS OF SELECTED DESIGN FACTORS
FOR RECTANGULAR ORIGINAL DESIGNS

DESIGN FACTORS	DESIGN			
	I	II	III	IV
Windows / Teaching Station	1	1	1	0
Ventilators Near Windows	No	Yes	No	No
Pull Down Blinds	Partial	Complete	None	Not Needed
Blackout Curtains				
Venetian Blinds				
Venetian Blinds Between Glass				
Light Switches / teaching station	2	1	2	1
Light Banks / Light Switch	1	4	1	4
Permanent Outlets / Teaching Station	2	3	3	3
Wall Plugs	X	X	X	X
Floor Plugs	X	X	X	X
Post Plugs				
Moveable Partitions / Teaching Station	2	3	2	2
Acoustic Ceiling Tile	X	X		
Plaster	X			
Wood			X	X
Acoustic Insulation				
Concrete Blocks	X	X	X	X
Plaster		X		X

X Indicates the stated condition exists in the design specified.

III. CIRCULAR ORIGINAL DESIGNS³

Four open area designs are basically circular. The first design has been repeated once with no changes and a second time with a minor modification. This modification included the removal of a wall to enlarge the instructional materials center. These schools have been included in the Design V group. The remaining circular design has several modifications but is very similar to Design V schools. Planned to accommodate eight rather than six teaching stations, alterations have been made to the electrical switch controls and the wall materials.

All schools in this category have carpeting and acoustic ceiling tile. Fluorescent lights have been installed in rows rather than clusters, and are controlled in banks. Each teaching station has a window equipped with blackout curtains. The ventilators are located directly beneath these curtains.

Design V (Afton, McKee, Brightview) Three schools have been included in this group. Two of the schools are identical. The third school has a modification in the instructional materials center. All schools in Design V have identical open areas.

Artificial light is controlled from one main switch panel. This panel is conveniently located for some teachers. Additional

³See Appendix A, Part II for outlines of the designs included.

electrical outlets have been provided in support posts. These outlets service the study carrels which have been built into these posts. Concrete blocks serve as the wall materials. A row of windows is located near the ceiling on each side of the IMC. Black-out curtains have been installed on the row having a southern exposure. Natural light entering from the northern windows does not create a problem for light control in the teaching stations.

Design VI (Kildare) This design is basically the same as Design V. Several modifications resulting from experience and evaluation of the Design V plants, have been included. Concrete blocks have been replaced by vinyl covered drywall in some parts of the school. All interior walls have been built using vinyl covered panels. The artificial light controls have been altered to permit easier access by teachers and students. Two electrical switch panels have replaced the one main panel. Greater flexibility has been built into the electrical panel. Individual rows of lights are controlled in banks by one switch.

Table III summarizes the conditions of the selected design factors of the circular original schools.

IV. OPEN AREA ADDITIONS TO EXISTING SELF CONTAINED SCHOOLS⁴

Six open area additions have been added to six self contained elementary schools. In each case a different design has been used.

⁴See Appendix A, Part III and Part IV for outlines of the designs included.

TABLE III
EXISTING CONDITIONS OF SELECTED DESIGN FACTORS FOR
CIRCULAR ORIGINAL DESIGNS

DESIGN FACTORS	DESIGNS	
	V	VI
Windows / Teaching Station	1	1
Ventilators Near Windows	Yes	Yes
Pull Down Blinds		
Blackout Curtains	X	X
Venetian Blinds		
Venetian Blinds Between Glass		
Light Switches / Teaching Station	2	3
Light Banks / Light Switch	2	1
Permanent Outlets / Teaching Station	2	2
Wall Plugs	X	X
Floor Plugs		
Post Plugs	X	
Moveable Partitions / Teaching Station	2	2
Acoustic Ceiling Tile	X	X
Plaster		
Wood		
Acoustic Insulation		
Concrete Blocks		X
Vinyl Covered Drywall	X	X

X Indicates the stated condition exists in the design specified

Four of the designs are basically rectangular; two of the designs are basically circular.

All schools in this category have carpet on the floors. Concrete blocks or plaster has been used for the wall construction. In the majority of the additions, the rows or clusters of fluorescent lights are separated by exposed ceiling beams. At least one electrical outlet is provided in the outer wall of the area. Additional outlets have been provided in the support posts.

Design VII (Mee-Yah-Noh) This basically rectangular addition has a large window which opens onto the instructional materials center. No light control facility exists for this window. Two small windows are located in each teaching station. Pull down blinds are the main light control facility. Awnings have been permanently mounted on the outside of the window areas and provide some additional light control. Some teaching stations have clusters of fluorescent lights. Fluorescent light fixtures have been installed in rows in other teaching stations. Wood serves as the ceiling material. Concrete blocks have been used for wall materials. Support posts, constructed of brick, contain light switches and additional electrical outlets.

Design VIII (Rio Terrace) This two story rectangular addition contains four separate large areas. Each area contains two or three teaching stations. The areas are separated by permanent walls. A regular door provides access between these instructional areas. Blackout curtains have been installed to control natural light on all windows. Artificial lights are controlled effectively. Two switches operate the three rows of fluorescent lights in each teaching

station. One switch controls one row of lights. The other switch controls the remaining two rows of lights. Acoustic ceiling tile and concrete block wall materials have been used.

The library in the original school has become a projection room. No special acoustic or artificial light control facilities have been added. Natural light control is not required since this room is located in the basement.

Design IX (Forest Heights) The design of the rectangular addition to this school imposes limitations on 16 mm motion picture utilization. Three of the four exterior walls are windowless. The remaining wall contains several windows. No lighting control has been placed on these windows which have an eastern exposure. An acoustic problem, resulting from the sub-floor construction, has not been solved by the placement of carpet on the floors. Because of the ground conditions, a crawl space exists between ground level and the wooden floor of the addition. Each electric light switch controls one bank of lights which have been installed in rows. Additional electrical outlets have been provided in support posts. Acoustic ceiling tile and concrete block wall construction have been used. The principal of this school stated that the acoustic conditions prevent effective 16 mm motion picture projection in the open area.

Design X (Waverley) A split-level rectangular open area was added to this self contained school. Two teaching stations are located on the upper level. Four teaching stations, separated by the instructional materials center, are located on the lower level. A feature of this design is the high wooden ceiling. Its height is

unique to the open area designs and necessary because of the split-level construction. The upper level is windowless. Windows on the southern side of the addition have Venetian blinds to control natural light. No natural lighting control exists for windows having a northern exposure. Carpet is used throughout the open area except on the stairs to the upper level. No ramp for moving audiovisual equipment from one level to another exists. Concrete blocks have been used in the wall construction. Control of artificial light is quite flexible. Three rows of lights provide illumination to each teaching station. One row is controlled by one switch. The remaining rows are controlled by a second switch.

Design XI (Princeton) This addition has been classified basically circular. Design XI has been built in the shape of an octagon. Small windows in each teaching station have Venetian blinds built between two panes of glass. Rows of artificial lights are controlled by one switch. Wood has been used as the ceiling material. A luminous ceiling is a feature of the instructional materials center. The IMC forms the hub of this open area. Instructional area lights and IMC lights can be controlled independently. Support posts, located around the IMC, contain additional electrical outlets. Concrete blocks, covered with a type of high gloss plastic base paint, have been used as wall materials.

Design XII (Elmwood) This circular addition features a split-level instructional materials center. Windows, equipped with Venetian blinds between glass, do not face directly into the open area. Slight outward extensions of the circumference of this design contain the

windows. Artificial lights have been installed in rows and are controlled in banks. Six banks of lights illuminate one teaching station. Ceiling beams do not exist in the instructional area. They do exist in the instructional materials center. The ceiling curves upward to facilitate the two story instructional materials center. Plaster walls and acoustic ceiling tile have been used in this design. Additional electrical outlets have been installed at the base of support posts.

Table IV summarizes the existing conditions of the selected design factors of open area additions to existing schools.

V. SUMMARY

The existing conditions of the selected design factors for the open area designs included in this study have been reported. Short descriptions of some unique features of each design were included. The tables serve to summarize the findings of the personal visitations. Findings common to all designs were not included in the tables. These findings preceded the description of the designs in each category. Some general requirements of the School Board, obtained from the Design Research Department, were reported.

TABLE IV
EXISTING CONDITIONS OF SELECTED DESIGN FACTORS FOR OPEN AREA ADDITIONS TO SELF CONTAINED DESIGNS

DESIGN FACTORS	DESIGN					
	VII	VIII	IX	X	XI	XII
Windows / Teaching Station	2	2	1*	3+	2	1
Ventilators near Windows	No	No	No	No	No	No
Pull Down Blinds	X	X	X	Partial		
Blackout Curtains						
Venetian Blinds						
Venetian Blinds Between Glass						
Light Switches / Teaching Station	2	3	3	2	2	2
Light Banks / Light Switch	1	1 1/2	1	1 1/2	3	3
Permanent Outlets / Teaching Station	2	2	2	1	1	1
Wall Plugs	X	X	X	X	X	X
Floor Plugs						
Post Plugs						
Moveable Partitions / Teaching Station	2	3	2	3	2	2
Acoustic Ceiling Tile						
Plaster						
Wood	X	X	X	X	X	X
Acoustic Insulation						
Concrete Blocks						
Plaster	X	X	X	X	X	X

X Indicates the stated condition exists in the design specified

* On one side of the open area only

+ On the lower level of the open area only

CHAPTER VI

REPORT OF FINDINGS FROM THE

SURVEY INSTRUMENT

Data representing the responses of the teachers to the opinion survey¹ are summarized in this chapter. The information is reported for rectangular original designs (Category I), circular original designs (Category II), rectangular addition designs (Category III) and circular addition designs (Category IV). Respondents were required to make one of five possible responses. These were strongly agree, agree, disagree, strongly disagree, and no opinion. Numbers and percentages of respondents selecting one of the five possible responses have been reported for each design category.

The results of Part I of the survey have been summarized under the headings of lighting controls, acoustic controls, electrical outlets, evaluations, organizations, innovations and assumptions. The data from Part II have also been tabulated to determine if any trends in responses can be detected relative to years of teacher training, total teaching experience, teaching experience in open area schools, teaching experience in the present school, completion of audiovisual communications courses, present enrolment in audiovisual communications courses, average number of times per week respondents

¹See Appendix C.

used the 16 mm motion picture projector and age of the respondents.

I. GENERAL INFORMATION

Surveys were distributed to 135 teachers teaching in the open area of the open area elementary schools in the Edmonton Public School System. Of this number, 97 (71.8 per cent) were completed and returned. Thirty-six (37.1 per cent) of the respondents taught in Category I schools (rectangular original designs); 21 (21.6 per cent) taught in Category II schools (circular original designs); 25 (25.8 per cent) taught in Category III schools (rectangular addition designs) and 15 (15.5 per cent) taught in Category IV schools (circular addition designs). This information is summarized on Table V.

II. LIGHTING CONTROLS

There were thirteen items relating to lighting controls in the open area. Three statements referred to natural lighting controls, six items referred to artificial lighting controls, and four items referred to the placement, identification and flexibility of artificial lighting control switches.

Natural Lighting Controls Item one referred to the adequacy of the natural lighting controls in darkening the teaching station for 16 mm motion picture presentation. The teachers in Category II recorded the highest percentage of agreement in the adequacy of the natural lighting controls (84.4 per cent). The schools in this design category have blackout curtains on every window in the open area. Teachers in Category I had the highest percentage of disagreement to this item (44.4 per cent). Category I schools have a variety of natural lighting

TABLE V
PERCENTAGE OF OPINION SURVEYS RETURNED

		Category						TOTAL	
I		II		III		IV			
No.	%	No.	%	No.	%	No.	%		
36	37.1	21	21.6	25	25.8	15	15.5	97	71.8

controls. Some windows have no natural lighting control facilities; some have blackout curtains; one school has no windows. Category III and IV schools also have a variety of natural lighting control facilities including Venetian blinds, Venetian blinds between glass, blackout curtains and pull down blinds. Table VI summarizes the responses of natural lighting control adequacy.

TABLE VI
NATURAL LIGHTING CONTROL

Item 1: The present natural lighting controls (window covers) are adequate for darkening the teaching station for 16 mm motion picture presentation.

Teacher Response	Category								TOTAL	
	I		II		III		IV			
	No.	%	No.	%	No.	%	No.	%		
Strongly Agree	7	19.4	7	33.3	6	24.0	7	46.7	27	27.8
Agree	8	22.2	12	51.1	6	24.0	5	33.3	31	32.0
Disagree	8	22.2	1	4.8	3	12.0	1	6.7	13	13.4
Strongly Disagree	8	22.2	1	4.8	7	28.0	2	13.3	18	18.6
No Opinion	5	14.0	0	0.0	3	12.0	0	0.0	8	8.2
Total	36	100.0	21	100.0	25	100.0	15	100.0	97	100.0

Items two and ten were included for two reasons. They were designed to determine whether or not drawn window covers interfered with the ventilation of the teaching station. In addition, inclusion of two items served as a check on the reliability of responses.

Results for both items indicated that teachers tended to respond in a like manner for both questions. A total of 74.2 per cent strongly agreed or agreed with item two; a total of 62.8 per cent strongly agreed or agreed with item ten. In both cases, the strongly disagreeing or disagreeing totaled 6.2 per cent. These results would seem to indicate that respondents were reacting to the items in a similar and reliable manner.

The results from the statement posed indicated that Category II schools had the highest percentage of agreement for both items. In these designs, ventilators have been located directly beneath the blackout curtains and would have the most effect on the natural lighting control facilities. The large percentages of no opinion for Categories I, III and IV is consistent with the findings reported from the personal visitations. One design in Category I designs had ventilators installed beneath the natural lighting control. This situation does not exist in Category III or Category IV schools. Table VII summarizes the findings of the effects of the ventilation outlets on the natural lighting controls. It allows for comparison of the results from items two and ten to determine the reliability of responses. These results can be attributed to the respondents actually having no opinion or deciding that items two and ten did not apply to their design.

TABLE VII

VENTILATION AND NATURAL LIGHTING CONTROL

Item Two: The present natural lighting controls (window covers) do not interfere with the ventilation of the teaching station.

Teacher Response	Category								TOTAL	
	I		II		III		IV			
	No.	%	No.	%	No.	%	No.	%	No.	%
Strongly Agree	12	33.3	7	33.3	6	24.0	8	53.3	33	34.0
Agree	13	36.1	12	57.1	9	36.0	5	33.4	39	40.2
Disagree	1	2.8	1	4.8	2	8.0	0	0.0	4	4.1
Strongly Disagree	0	0.0	0	0.0	2	8.0	0	0.0	2	2.1
No Opinion	10	27.8	1	4.8	6	24.0	2	13.3	19	19.6
Total	36	100.0	21	100.0	25	100.0	15	100.0	97	100.0

Item Ten: Ventilation of the teaching station remains normal when blackout drapes or pull down blinds are covering the windows during a 16 mm motion picture presentation.

Strongly Agree	4	11.1	5	23.8	3	12.0	5	33.3	17	17.5
Agree	14	38.9	14	66.7	10	40.0	6	40.0	44	45.3
Disagree	1	2.8	2	9.5	2	8.0	0	0.0	5	5.2
Strongly Disagree	0	0.0	0	0.0	1	4.0	0	0.0	1	1.0
No Opinion	17	47.2	0	0.0	9	36.0	4	26.7	30	31.0
Total	36	100.0	21	100.0	25	100.0	15	100.0	97	100.0

Artificial Lighting Control Six questions referred to artificial lighting controls. Item three was concerned with the adequacy of existing moveable partitions for controlling light from adjacent teaching stations while the respondent's teaching station is darkened for projection purposes. Sixty-three (64.9 per cent) disagreed with the statement that moveable partitions were adequate for controlling artificial light. Twenty-seven (27.9 per cent) agreed that such facilities were adequate. Teachers in Category IV recorded the highest percentage of disagreement, 73.4 per cent. Teachers in Category II schools recorded the highest percentage of agreement, 47.6 per cent. These results question the adequacy of moveable partitions for artificial lighting control, which tends to be at least one of their purposes. Table VIII summarizes the results for item three.

Light emanating from adjacent hallways, which may remain illuminated during a 16 mm motion picture presentation, may affect the picture image. Teachers responding to item five were divided on this point. Forty-eight (49.5 per cent) agreed that such light does affect the image; 43 (44.4 per cent) disagreed that such light affects the image. Teachers in Category I schools reported, the highest percentage of agreement, 61.1 per cent, to this statement. Teachers in Category IV schools disagreed that hallway light affects the picture image by 53.4 per cent. The fact that 49.5 per cent of the respondents agreed that hallway light affects the picture image indicates that changes to the installation and control of hallway light should be studied. Table IX summarizes the results for item five.

TABLE VIII
MOVEABLE PARTITIONS

Item Three: Moveable partitions between teaching stations are adequate to control light from adjacent teaching stations while your teaching station is darkened for projection purposes.

Teacher Response	Category								TOTAL	
	I		II		III		IV			
	No.	%	No.	%	No.	%	No.	%	No.	%
Strongly Agree	1	2.8	2	9.5	1	4.0	0	0.0	4	4.2
Agree	8	22.2	8	38.1	5	20.0	2	13.3	23	23.7
Disagree	7	19.5	8	38.1	6	24.0	6	40.0	27	27.8
Strongly Disagree	17	47.2	3	14.3	11	44.0	5	33.4	36	37.1
No Opinion	3	8.3	0	0.0	2	8.0	2	13.3	7	7.2
Total	36	100.0	21	100.0	25	100.0	15	100.0	97	100.0

Sixty-six (68.0 per cent) disagreed with item eight and reported that artificial light filtering into their darkened teaching station does affect the picture image. Twenty-nine (29.9 per cent) reported that this condition did not affect the picture image. The problem seems to be most acute in Category III and Category I schools. Table X summarizes the results for item eight.

TABLE IX
ADJACENT HALLWAY ARTIFICIAL LIGHT

Item Five: Light from adjacent hallways affects the picture image.

Teacher Response	Category								TOTAL	
	I		II		III		IV			
	No.	%	No.	%	No.	%	No.	%	No.	%
Strongly Agree	10	27.8	1	4.8	3	12.0	2	13.3	16	16.5
Agree	12	33.3	11	52.4	6	24.0	3	20.0	32	33.0
Disagree	10	27.8	8	38.0	9	36.0	4	26.7	31	32.0
Strongly Disagree	3	8.3	1	4.8	4	16.0	4	26.7	12	12.4
No Opinion	1	2.8	0	0.0	3	12.0	2	13.3	6	6.1
Total	36	100.0	21	100.0	25	100.0	15	100.0	97	100.0

Table XI reports the findings from item eleven. This item explored the adequacy of adjacent fluorescent lighting in providing indirect lighting to facilitate student note taking during a 16 mm motion picture presentation. Sixty (72 per cent) of the respondents agreed that fluorescent lighting emanating from an adjacent teaching station provided sufficient illumination for student note taking in their darkened teaching station. Twenty-three (23.6 per cent) disagreed that sufficient lighting from this source was provided. Category IV teachers, reporting 86.7 per cent agreement, felt their designs allowed for student note taking. This category reported the highest percentage of agreement.

TABLE X

ADJACENT TEACHING STATION ARTIFICIAL LIGHT

Item Eight: Light from adjacent teaching stations filtering into your darkened area does not interfere with the projected image of a 16 mm motion picture.

Teacher Response	Category								TOTAL	
	I		II		III		IV			
	No.	%	No.	%	No.	%	No.	%	No.	%
Strongly Agree	0	0.0	1	4.8	1	4.0	1	6.7	3	3.1
Agree	10	27.8	7	33.3	4	16.0	5	33.3	26	26.8
Disagree	13	36.1	13	61.9	11	44.0	6	40.0	43	44.3
Strongly Disagree	13	36.1	0	0.0	8	32.0	2	13.3	23	23.7
No Opinion	0	0.0	0	0.0	1	4.0	1	6.7	2	2.1
Total	36	100.0	21	100.0	25	100.0	15	100.0	97	100.0

The fact that only two designs in Category I schools have incandescent spot lights installed in teaching stations and focused on the walls explains why 59 (61.4 per cent) of the teachers had no opinion or felt that item twelve did not apply to their design. Table XII reports the responses of the teachers to the adequacy of incandescent spot lights in providing indirect lighting for student note taking; twelve (12.5 per cent) agreed that such an installation would provide adequate lighting for student note taking. Twenty-five (26.1 per cent) disagreed with the item. These results tend to indicate

that more schools should have incandescent spot lights installed. This will provide a greater number of teachers with the opportunity of using such a facility and therefore the necessary experience for more meaningful assessment of the installation.

TABLE XI

ADJACENT FLUORESCENT LIGHTING FOR STUDENT NOTE TAKING

Item Eleven: Fluorescent lighting, that filters into the darkened teaching station, provides adequate light for student note taking during a 16 mm motion picture.

Teacher Response	Category								TOTAL	
	I		II		III		IV			
	No.	%	No.	%	No.	%	No.	%	No.	%
Strongly Agree	2	5.6	4	19.0	2	8.0	3	20.0	11	11.4
Agree	22	61.0	9	42.9	18	72.0	10	66.7	49	50.6
Disagree	9	25.0	7	33.3	3	12.0	0	0.0	19	19.6
Strongly Disagree	2	5.6	1	4.8	1	4.0	0	0.0	4	4.2
No Opinion	1	2.8	0	0.0	1	4.0	2	13.3	4	4.2
Total	36	100.0	21	100.0	25	100.0	15	100.0	97	100.0

Item thirteen was designed as a summarizing statement relative to the natural and artificial lighting controls. Fifty-seven (58.8 per cent) of the respondents agreed that lighting controls are adequate for projecting a 16 mm motion picture in their teaching stations rather than in a self contained classroom. Thirty-five (36.1 per cent) felt they would rather use a self contained classroom. Category I and

TABLE XII

INCANDESCENT SPOT LIGHTS FOR STUDENT NOTE TAKING

Item Twelve: Incandescent spot lights provide adequate indirect lighting for student note taking.

Teacher Response	Category								TOTAL	
	I		II		III		IV			
	No.	%	No.	%	No.	%	No.	%	No.	%
Strongly Agree	0	0.0	0	0.0	0	0.0	1	6.7	1	1.0
Agree	6	17.1	3	14.3	1	4.0	1	6.7	11	11.5
Disagree	7	20.0	3	14.3	4	16.0	1	6.7	15	15.6
Strongly Disagree	3	8.6	4	19.0	2	8.0	1	6.7	10	10.5
No Opinion	19	54.3	11	52.4	18	72.0	11	73.2	59	61.4
Total	35	100.0	21	100.0	25	100.0	15	100.0	96	100.0

Category II schools reported the highest percentage of agreement with this item, 61.1 per cent and 61.9 per cent respectively. Category III and Category IV schools each reported 40.0 per cent, the lowest percentage of agreement. Table XIII summarizes the results from item thirteen.

TABLE XIII

TEACHING STATION LIGHTING CONTROLS DURING
16 MM MOTION PICTURE PRESENTATION

Item Thirteen: Lighting controls in the open area do not necessitate projection a 16 mm motion picture in a self contained classroom.

Teacher Response	Category								TOTAL	
	I		II		III		IV			
	No.	%	No.	%	No.	%	No.	%		
Strongly Agree	3	8.3	4	19.0	4	16.0	1	6.7	12	12.4
Agree	19	52.8	9	42.9	10	40.0	7	46.6	45	46.4
Disagree	8	22.2	6	28.6	3	12.0	1	6.7	18	18.6
Strongly Disagree	5	13.9	0	0.0	7	28.0	5	33.3	17	17.5
No Opinion	1	2.8	2	9.5	1	4.0	1	6.7	5	5.1
Total	36	100.0	21	100.0	25	100.0	15	100.0	97	100.0

Electric Light Switches Four statements referred to the convenience, identification and flexibility of the electric light switches in the open area. Two of the questions served as a second reliability check for the instrument.

Results from item four show that 54 (55.6 per cent) strongly agreed or agreed to the question: 56 (57.7 per cent) of the responses to item nine strongly agreed or agreed with that statement. Forty-two (43.2 per cent) disagreed or strongly disagreed with item four;

39 (40.2 per cent) of the teachers disagreed or strongly disagreed with item nine. The "no opinion" responses increased by 1.1 per cent between item four and item nine. These findings tend to indicate that respondents are answering the items consistently.

Items four and nine referred to the location of the electric light switches relative to the position of the respondent's teaching station. The majority of the teachers in Categories I and II felt that the light switches were conveniently located according to the results from both statements. Responses to item four by Category IV teachers indicated that 66.7 per cent agreed the lights were not conveniently located. This percentage decreased to 40.0 per cent for Category IV teachers in item nine. Responses to item four by Category III teachers indicated that 48.0 per cent disagreed with the item. This percentage increased to 56.0 per cent disagreement in item nine. Table XIV summarizes the results for questions four and nine of the survey instrument.

Item six was directly concerned with the identification of the electric light switches. Sixty-two (64.0 per cent) of the respondents disagreed that electric light switches were adequately labelled. This disagreement was most noticeable in Category II schools (85.7 per cent) and in Category III schools (84.0 per cent). These responses indicate that changes are needed in the labelling of electric light switches, especially in open areas where all switches are located on one large panel. Table XV summarizes the results from item six.

TABLE XIV
CONVENIENCE OF ELECTRIC LIGHT SWITCHES

Item Four: Light switches are conveniently located in the open area for you or your students to operate.

Teacher Response	Category								TOTAL	
	I		II		III		IV			
	No.	%	No.	%	No.	%	No.	%		
Strongly Agree	3	8.3	3	14.3	2	8.0	0	0.0	8	8.2
Agree	19	52.8	11	52.4	11	44.0	5	33.4	46	47.5
Disagree	7	19.4	6	28.6	9	36.0	5	33.3	27	27.8
Strongly Disagree	6	16.7	1	4.7	3	12.0	5	33.3	15	15.5
No Opinion	1	2.8	0	0.0	0	0.0	0	0.0	1	1.0
Total	36	100.0	21	100.0	25	100.0	15	100.0	97	100.0

Item Nine: Interior light switches are handy to operate.

Strongly Agree	5	13.8	3	14.3	1	4.0	0	0.0	9 9.3
Agree	18	50.0	11	52.4	10	40.0	8	53.3	47 48.4
Disagree	6	16.7	7	35.3	8	32.0	3	20.0	24 24.8
Strongly Disagree	6	16.7	0	0.0	6	24.0	3	20.0	15 15.4
No Opinion	1	2.8	0	0.0	0	0.0	1	6.7	2 2.1
Total	36	100.0	21	100.0	25	100.0	15	100.0	97 100.0

TABLE XV

ELECTRIC LIGHT SWITCH IDENTIFICATION

Item Six: Electric light switches are adequately labelled as to which lights they control.

Teacher Response	Category								TOTAL	
	I		II		III		IV			
	No.	%	No.	%	No.	%	No.	%		
Strongly Agree	5	13.9	1	4.8	1	4.0	1	6.7	8	8.2
Agree	13	36.1	2	9.5	3	12.0	8	53.3	26	26.8
Disagree	11	30.6	10	47.6	7	28.0	2	13.3	30	30.9
Strongly Disagree	7	19.4	8	38.1	14	56.0	3	20.0	32	33.1
No Opinion	0	0.0	0	0.0	0	0.0	1	6.7	1	1.0
Total	36	100.0	21	100.0	25	100.0	15	100.0	97	100.0

Table XVI reports the results from item seven. This question was included to determine the flexibility of artificial light control. Fifty-four (55.4 per cent) of the teachers agreed that they could switch off lights to darken their teaching station without interfering with the lighting in an adjacent teaching station. Forty-one (42.2 per cent) of the respondents disagreed. Category IV teachers had the highest percentage of agreement (66.7 per cent); Category I teachers had the highest percentage of disagreement (63.9 per cent).

TABLE XVI
FLEXIBILITY OF ARTIFICIAL
LIGHTING CONTROL

Item Seven: You can switch off lights to darken your teaching area without interfering with the lights in an adjacent teaching station.

Teacher Response	Category								TOTAL	
	I		II		III		IV			
	No.	%	No.	%	No.	%	No.	%	No.	%
Strongly Agree	2	5.6	3	14.3	4	16.0	1	6.7	10	10.3
Agree	11	30.6	12	57.1	12	48.0	9	60.0	44	45.4
Disagree	10	27.7	6	28.6	6	24.0	2	13.3	24	24.7
Strongly Disagree	13	36.1	0	0.0	2	8.0	2	13.3	17	17.5
No Opinion	0	0.0	0	0.0	1	4.0	1	6.7	2	2.1
Total	36	100.0	21	100.0	25	100.0	15	100.0	97	100.0

Summary Table XVII summarizes all the responses made by all the teachers included in the present study relative to the lighting control items (items one through thirteen of the survey). General agreement with the items was indicated by 50.5 per cent of the respondents. Disagreement with the items was expressed by 38.2 per cent. Category II schools recorded the highest percentage of agreement with the items referring to lighting controls (59.2 per cent). Category III schools recorded the highest percentages of disagreement (43.4 per cent).

TABLE XVII
SUMMARY OF LIGHT CONTROL

Teacher Response	Category								TOTAL	
	I		II		III		IV			
	No.	%	No.	%	No.	%	No.	%	No.	%
Strongly Agree	54	11.6	40	14.7	34	10.5	30	15.4	158	12.6
Agree	173	37.0	121	44.5	105	32.2	74	37.9	473	37.9
Disagree	98	21.0	78	28.7	73	22.5	31	15.9	280	22.2
Strongly Disagree	83	17.8	19	7.0	68	20.9	32	16.4	202	16.0
No Opinion	59	12.6	14	5.1	45	13.8	28	14.4	146	11.3
Total	467	100.0	272	100.0	325	100.0	195	100.0	1259	100.0

III. ACOUSTICAL CONTROLS

Eleven items referred to the acoustical controls in the open area. Statements related to the adequacy of carpeting, acoustic ceiling tile, wall materials and moveable partitions in controlling sound that emanates from the sound track of a 16 mm motion picture.

Item fifteen referred to the adequacy of the carpet in reducing noise levels. Fifty-six (57.6 per cent) of the teachers agreed that the carpeting reduces noise levels in the open area. Thirty-nine (40.2 per cent) disagreed with item fifteen. Category II and Category I schools recorded the highest percentages of agreement, Category IV schools recorded the highest percentage of disagreement.

These results tend to indicate that carpeting is less effective in open area additions. Table XVIII summarizes the results from item fifteen.

TABLE XVIII
ADEQUACY OF CARPETING DURING 16 MM MOTION
PICTURE PRESENTATION

Item Fifteen: The carpeting adequately reduces noise levels in the open area.

Teacher Response	Category								TOTAL	
	I		II		III		IV			
	No.	%	No.	%	No.	%	No.	%		
Strongly Agree	8	22.1	3	14.3	5	20.0	5	33.3	21	21.6
Agree	14	38.9	11	52.4	8	32.0	2	13.3	35	36.0
Disagree	2	5.6	5	23.8	6	24.0	3	20.0	16	16.5
Strongly Disagree	11	30.6	2	9.5	5	20.0	5	33.4	23	23.7
No Opinion	1	2.8	0	0.0	1	4.0	0	0.0	2	2.1
Total	36	100.0	21	100.0	25	100.0	15	100.0	97	100.0

Item sixteen and eighteen referred to the adequacy of the moveable partitions in creating acoustical barriers between teaching stations. In both cases teachers disagreed that the partitions served as acoustical barriers during 16 mm motion picture presentation. Eighty-one (83.5 per cent) disagreed with both items. For each item, eleven (11.3 per cent) agreed that the partitions provided some acoustical barrier. Teachers in Category I and Category III schools had the

highest percentages of disagreement, 88.9 per cent and 88.0 per cent respectively. With item sixteen, six (28.6 per cent) of the teachers in Category II schools agreed with items sixteen and eighteen.

Category II schools agreed with items sixteen and eighteen. Category IV teachers disagreed with item eighteen by 86.7 per cent. This data indicated that moveable partitions, which presently exist in open area schools, are of little consequence in controlling sound emanating from a 16 mm motion picture presentation. Table XIX summarizes the results from items eighteen and sixteen.

Table XX summarizes the results from item seventeen, which referred to the adequacy of all the acoustic controls in reducing the higher noise levels occurring during a 16 mm motion picture presentation. Examples of higher noise levels are the amplified sound track and the noise emanating from the projector motor. A majority of the respondents, 67 (69.1 per cent), disagreed with the item. They indicated that the acoustical controls do not control higher noise levels. Twenty-six (26.8 per cent) of the teachers agreed with item seventeen. Teachers in Category III had the highest percentage of disagreement with the item (73.4 per cent). Category II teachers recorded the highest percentage of agreement (47.7 per cent).

TABLE XIX

MOVEABLE PARTITIONS AS ACOUSTICAL BARRIERS

Item Sixteen: Moveable partitions are adequate in controlling sound emanating from other teaching stations during a 16 mm motion picture presentation in your teaching station.

Teacher Response	Category								TOTAL	
	I		II		III		IV			
	No.	%	No.	%	No.	%	No.	%		
Strongly Agree	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Agree	4	11.1	6	28.6	0	0.0	1	6.7	11	11.3
Disagree	11	30.6	9	42.8	3	12.0	2	13.3	25	25.7
Strongly Disagree	21	58.3	6	28.6	19	76.0	10	66.7	56	57.8
No Opinion	0	0.0	0	0.0	3	12.0	2	13.3	5	5.2
Total	36	100.0	21	100.0	25	100.0	15	100.0	97	100.0

Item Eighteen: Moveable partitions are adequate in controlling sound emanating from the sound track of a 16 mm motion picture.

Strongly Agree	0	0.0	0	0.0	0	0.0	0	0.0	0 0.0
Agree	5	13.9	6	28.6	0	0.0	0	0.0	11 11.3
Disagree	10	27.8	11	52.4	9	36.0	3	20.0	34 35.0
Strongly Disagree	17	47.2	4	19.0	16	64.0	10	66.7	47 48.5
No Opinion	1	11.1	0	0.0	0	0.0	2	13.3	6 6.2
Total	36	100.0	21	100.0	25	100.0	15	100.0	97 100.0

TABLE XX

ACOUSTICAL CONTROLS DURING 16 MM MOTION
PICTURE PRESENTATION

Item Seventeen: Acoustic controls have adequately reduced higher noise levels in the open area resulting from 16 mm motion picture presentation.

Teacher Response	Category								TOTAL	
	I		II		III		IV			
	No.	%	No.	%	No.	%	No.	%		
Strongly Agree	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Agree	12	33.3	10	47.7	2	8.0	2	13.3	26	26.8
Disagree	8	22.2	8	38.0	9	36.0	3	20.0	28	28.8
Strongly Disagree	16	44.5	2	9.5	13	52.0	8	53.4	39	40.3
No Opinion	0	0.0	1	4.8	1	4.0	2	13.3	4	4.1
Total	36	100.0	21	100.0	25	100.0	15	100.0	97	100.0

Results from item nineteen indicated that the majority of the teachers (57.8 per cent) disagreed that noise from activities in adjacent teaching stations is adequately controlled during a 16 mm motion picture presentation in respondent's teaching station. Thirty-four (35.0 per cent) indicated agreement on this point. Category IV and Category III reported high disagreement, with this item, 93.3 per cent and 84.0 per cent respectively. Of all the teachers in

Category II, 76.2 per cent agreed with this item. Considering these results, acoustical controls in open area additions appear to be much less effective than those in circular original schools. Table XXI summarizes the results for question nineteen.

TABLE XXI

TEACHING STATION ACOUSTICAL CONTROLS FOR 16 MM MOTION
PICTURE PRESENTATION

Item Nineteen: Noise from adjacent teaching stations is controlled adequately for 16 mm motion picture presentation in your teaching station.

Teacher Response	Category								TOTAL	
	I		II		III		IV			
	No.	%	No.	%	No.	%	No.	%	Np.	%
Strongly Agree	0	0.0	0	0.0	1	4.0	0	0.0	1	1.0
Agree	15	41.7	16	76.2	2	8.0	1	6.7	34	35.0
Disagree	5	13.9	3	14.3	8	32.0	6	40.0	22	22.8
Strongly Disagree	12	33.3	1	4.8	13	52.0	8	53.3	34	35.0
No Opinion	4	11.1	1	4.8	1	4.0	0	0.0	6	6.2
Total	36	100.0	21	100.0	25	100.0	15	100.0	97	100.0

Table XXII summarizes the results from item twenty of the survey instrument. The respondents are divided on the point that the acoustical controls are such in the open area that it is not necessary to project a 16 mm motion picture in a self contained teaching area. Forty-seven (48.4 per cent) reported it is necessary to use a self contained teaching area. Forty-three (44.4 per cent) reported that

the open area could be used. Category IV schools reported the highest percentage of disagreement, 86.6 per cent, with this item. Category I schools and Category II reported the highest percentage of agreement, 58.4 per cent and 57.1 per cent respectively.

TABLE XXII

THE ADEQUACY OF THE TEACHING STATION FOR
16 MM MOTION PICTURE PRESENTATION

Item Twenty: Acoustic controls in the open area do not necessitate projecting a 16 mm motion picture in a self contained classroom.

Teacher Response	Category								TOTAL	
	I		II		III		IV			
	No.	%	No.	%	No.	%	No.	%		
Strongly Agree	0	0.0	1	4.8	0	0.0	1	6.7	2	2.1
Agree	21	58.4	11	52.3	8	32.0	1	6.7	41	42.3
Disagree	5	13.9	7	33.3	8	32.0	4	26.6	24	24.7
Strongly Disagree	7	19.4	1	4.8	6	24.0	9	60.0	23	23.7
No Opinion	3	8.3	1	4.8	3	12.0	0	0.0	7	7.2
Total	36	100.0	21	100.0	25	100.0	15	100.0	97	100.0

Statement twenty-one relates to statement nineteen insofar as the opposite situations are presented. Table XXIII reports the findings from item twenty-one. Seventy (72.2 per cent) of the teachers felt that the acoustical controls did not control the sound emanating from a sound track of a 16 mm motion picture projector in an adjacent

teaching station. Twenty-one (21.6 per cent) agreed that such sound was adequately controlled for their purposes. Category III and Category IV schools registered the highest percentages of disagreement, 80.0 per cent each. Category II schools recorded the highest percentage of agreement, 38.1 per cent. These results question the effectiveness of the acoustical treatment for 16 mm projection in the open area schools.

TABLE XXIII

ACOUSTICAL CONTROLS FOR ADJACENT TEACHING STATIONS

Item Twenty-one: Sound emanating from the sound track of a 16 mm motion picture presentation in an adjacent teaching station is adequately controlled so that you can carry on your class activities in the normal manner.

Teacher Response	Category								TOTAL	
	I		II		III		IV			
	No.	%	No.	%	No.	%	No.	%	No.	%
Strongly Agree	0	0.0	0	0.0	0	0.0	1	6.7	1	1.0
Agree	7	19.5	8	38.1	3	12.0	2	13.3	20	20.6
Disagree	13	36.1	11	52.3	13	52.0	4	26.7	41	42.3
Strongly Disagree	13	36.1	1	4.8	7	28.0	8	53.3	29	29.9
No Opinion	3	8.3	1	4.8	2	8.0	0	0.0	6	6.2
Total	36	100.0	21	100.0	25	100.0	15	100.0	97	100.0

Respondents tended to disagree with item twenty-two. The results, reported in Table XXIV, indicated that 47 (48.5 per cent) disagreed that the overall shape of the open area improved the acoustics of a

teaching station. Twenty-eight (28.9 per cent) of the respondents agreed with this point. Category II schools had the highest percentage of agreement, 57.2 per cent; Category III recorded the highest percentage of disagreement, 60.0 per cent.

TABLE XXIV

ACOUSTICS AND OPEN AREA SHAPE

Item Twenty-Two: The overall shape of the open area (circular, rectangular, etc.) improves the acoustics of the teaching station during a 16 mm motion picture.

Teacher Response	Category								TOTAL	
	I		II		III		IV			
	No.	%	No.	%	No.	%	No.	%	No.	%
Strongly Agree	0	0.0	2	9.5	0	0.0	0	0.0	2	2.1
Agree	7	19.4	10	47.7	5	20.0	4	26.7	26	26.8
Disagree	13	36.2	5	23.8	10	40.0	3	19.9	31	32.0
Strongly Disagree	7	19.4	0	0.0	5	20.0	4	26.7	16	16.5
No Opinion	9	25.0	4	19.0	5	20.0	4	26.7	22	22.6
Total	36	100.0	21	100.0	25	100.0	15	100.0	97	100.0

Item twenty-three refers directly to acoustic ceiling tile as an aid in controlling sound during a 16 mm motion picture presentation. Fifty-one (52.6 per cent) of the teachers agreed with this point. Seventeen (17.5 per cent) disagreed. The high percentage of no opinion

or not applicable responses, 29.9 per cent, can be attributed to the fact that some Category III and Category I designs had no acoustic ceiling tile. Table XXV summarizes the results from item twenty-three.

TABLE XXV
ACOUSTIC CEILING TILE

Item Twenty-Three: Acoustic ceiling tile aids in controlling sound during a 16 mm motion picture presentation.

Teacher Response	Category								TOTAL	
	I		II		III		IV			
	No.	%	No.	%	No.	%	No.	%	No.	%
Strongly Agree	1	2.8	3	14.3	0	0.0	1	6.7	5	5.2
Agree	19	52.8	15	71.4	8	32.0	4	26.7	46	47.4
Disagree	5	13.9	2	9.5	3	12.0	0	0.0	10	10.3
Strongly Disagree	3	8.3	0	0.0	1	4.0	3	20.0	7	7.2
No Opinion	8	22.2	1	4.8	13	52.0	7	46.6	29	29.9
Total	36	100.0	21	100.0	25	100.0	15	100.0	97	100.0

Fifty-six (57.6 per cent) of the respondents agreed that sound from a 16 mm motion picture sound track does not reverberate in the open area. Thirty-four (35.1 per cent) disagreed with item twenty-four. The highest percentage of agreement, 66.6 per cent, was recorded by Category I and Category IV schools. The highest percentage of

disagreement, 52.0 per cent, was reported by teachers in Category III schools. Table XXVI summarizes the results from item twenty-four.

TABLE XXVI
REVERBERATION IN THE OPEN AREA

Item Twenty-four: Sound emanating from the sound track of a 16 mm motion picture does not echo or reverberate in the open area.

Teacher Response	Category								TOTAL	
	I		II		III		IV			
	No.	%	No.	%	No.	%	No.	%		
Strongly Agree	4	11.1	2	9.5	2	8.0	3	20.0	11	11.3
Agree	20	55.6	10	47.6	8	32.0	7	46.0	45	46.3
Disagree	10	27.8	6	28.6	9	36.0	1	6.7	26	26.8
Strongly Disagree	2	5.5	1	4.8	4	16.0	1	6.7	8	8.3
No Opinion	0	0.0	2	9.5	2	8.0	3	20.0	7	7.3
Total	36	100.0	21	100.0	25	100.0	15	100.0	97	100.0

Item twenty-five was included as a summarizing statement and designed to record each respondents' overall estimate of the acoustical controls. Forty-four (45.4 per cent) of the respondents agreed that the existing acoustical controls are adequate for 16 mm motion picture presentation within the open area. Fifty (51.5 per cent) disagreed. Categories II, I and III recorded the highest percentage of agreement, 52.3 per cent, 50.0 per cent and 48.0 per cent respectively.

Category IV schools recorded the highest percentage of disagreement, 80.0 per cent, with the items. Table XXVII summarizes the results for item twenty-five.

TABLE XXVII

ADEQUACY OF EXISTING ACOUSTICAL CONTROLS FOR 16 MM
MOTION PICTURE PRESENTATION

Item Twenty-Five: The existing acoustical controls are adequate for effective 16 mm motion picture presentation in your teaching station.

Teacher Response	Category								TOTAL	
	I		II		III		IV			
	No.	%	No.	%	No.	%	No.	%	No.	%
Strongly Agree	1	2.8	1	4.8	1	4.0	2	13.3	5	5.1
Agree	17	47.2	10	47.5	11	44.0	1	6.7	39	40.3
Disagree	8	22.2	8	38.1	6	24.0	5	33.3	27	27.8
Strongly Disagree	9	25.0	1	4.8	6	24.0	7	46.7	23	23.7
No Opinion	1	2.8	1	4.8	1	4.0	0	0.0	3	3.1
Total	36	100.0	21	100.0	25	100.0	15	100.0	97	100.0

Summary. Table XXVIII serves as a summary of all the responses made by all the teachers relative to the to the items of the survey instrument which dealt with acoustical control (items fifteen through twenty-five of the survey).

Considering all the responses, 55.2 per cent disagreed or strongly disagreed with the items; 35.7 per cent agreed or strongly agreed with the items. Category III and Category IV schools recorded the highest percentage of disagreement, 65.0 per cent and 64.8 per cent respectively. The highest percentage of agreement, 53.9 per cent was reported by Category II schools.

TABLE XXVIII
SUMMARY OF RESPONSES TO ACOUSTICAL
CONTROL ITEMS

Teacher Response	Category								TOTAL	
	I		II		III		IV			
	No.	%	No.	%	No.	%	No.	%	No.	%
Strongly Agree	14	3.5	12	5.2	9	13.3	13	7.9	48	4.5
Agree	141	35.7	112	48.7	55	20.0	25	15.2	333	31.2
Disagree	90	22.7	75	32.6	84	30.5	34	20.6	283	26.5
Strongly Disagree	118	29.8	19	8.3	95	34.5	73	44.2	305	28.7
No Opinion	33	8.3	12	5.2	32	11.7	20	12.1	97	9.1
Total	396	100.0	230	100.0	275	100.0	165	100.0	1066	100.0

IV. ELECTRICAL OUTLETS

Two items related to the number and location of the electrical outlets in the teaching station. Item twenty-six referred to the number of electrical outlets. Fifty-eight (59.8 per cent) of the teachers agreed that sufficient electrical outlets had been supplied

in their teaching stations. Thirty-eight (39.2 per cent) disagreed with this statement. The highest percentage of agreement, 76.2 per cent, was recorded by Category II teachers. Category I teachers had the highest percentage of disagreement, 50.0 per cent. Table XXIX summarizes the results of item twenty-six.

TABLE XXIX

NUMBER OF ELECTRICAL OUTLETS

Item Twenty-Six: Sufficient electric outlets have been supplied in your teaching station for your purposes.

Teacher Response	Category								TOTAL	
	I		II		III		IV			
	No.	%	No.	%	No.	%	No.	%	No.	%
Strongly Agree	4	11.1	2	9.5	2	8.0	0	0.0	8	8.3
Agree	14	38.9	14	66.7	13	52.0	9	60.0	50	51.5
Disagree	12	33.3	4	19.0	4	16.0	4	26.7	24	24.8
Strongly Disagree	6	16.7	1	4.8	5	20.0	2	13.3	14	14.4
No Opinion	0	0.0	0	0.0	1	4.0	0	0.0	1	1.0
Total	36	100.0	21	100.0	25	100.0	15	100.0	97	100.0

Item twenty-seven was concerned with the placement of the electrical outlets in the teaching station. Forty-eight (51.1 per cent) of the teachers agreed that the location of the electrical outlets was convenient. Forty-six (47.9 per cent) disagreed with this item. Category II and Category IV teachers recorded the highest percentages of agreement, 57.2 per cent and 53.3 per cent respectively. Category I

and Category III teachers reported the highest percentage of disagreement 54.3 per cent and 50.0 per cent respectively. Although the percentage differences between those respondents who agreed and disagreed is not great, the results indicate that a slight majority of teachers in circular open areas, whether they are original schools or additions to existing self contained schools, agreed with this item. Table XXX summarizes the results.

TABLE XXX

CONVENIENCE OF ELECTRICAL OUTLETS

Item Twenty-Seven: The placement of the electric outlets in the teaching station is convenient for your purposes.

Teacher Response	Category								TOTAL	
	I		II		III		IV			
	No.	%	No.	%	No.	%	No.	%	No.	%
Strongly Agree	3	8.6	0	0.0	2	8.3	0	0.0	5	5.3
Agree	13	37.1	12	57.2	10	41.7	8	53.3	43	45.8
Disagree	14	40.0	7	33.3	5	20.8	4	26.7	30	31.8
Strongly Disagree	5	14.3	2	9.5	7	29.2	2	13.3	16	16.1
No Opinion	0	0.0	0	0.0	0	0.0	1	6.7	1	1.0
Total	35	100.0	21	100.0	24	100.0	15	100.0	95	100.0

Summary. Table XXXI serves to summarize all the responses made by all the teachers to the items referring to the number and location of the electric outlets in the teaching stations (items twenty-six and twenty-seven). Of all the responses, 55.3 per cent of the

teachers agreed with both items and 43.7 per cent disagreed with the items. Category II schools recorded the highest percentage of agreement, 66.7 per cent; Category I schools recorded the highest percentage of disagreement, 52.5 per cent. Teachers tend to be divided on the appropriateness of the number and location of the electrical outlets in the teaching stations.

TABLE XXXI
SUMMARY OF RESPONSES TO ELECTRICAL OUTLET ITEMS

Teacher Response	Category								TOTAL	
	I		II		III		IV			
	No.	%	No.	%	No.	%	No.	%	No.	%
Strongly Agree	7	9.9	2	4.8	4	8.2	0	0.0	13	6.7
Agree	27	38.0	26	61.9	23	46.9	17	56.7	93	48.6
Disagree	26	36.6	11	26.2	9	18.4	8	26.7	54	28.1
Strongly Disagree	11	15.5	3	7.1	12	24.5	4	13.3	30	15.5
No Opinion	0	0.0	0	0.0	1	2.0	1	3.3	2	1.0
Total	71	100.0	42	100.0	49	100.0	30	100.0	192	100.0

V. ANALYSIS BY TEACHER INFORMATION

The responses of the teachers were analyzed by the teacher information dealt with in Part II of the opinion survey. Part II referred to years of teacher training, total teaching experience, total teaching experience in open area schools, total teaching experience in the present school, completion of audio visual communi-

cations courses, present enrolment in audiovisual communications courses, the average number of times per week respondents used the 16 mm motion picture projector and the age of the respondents. This analysis was made to determine if any trends in responding could be attributed to any of the factors of teacher information.

The total number of responses made to the twenty-six questions relating to the adequacy of the existing designs was 2517. Of this number, 1113 (44.2 per cent) of the responses agreed or strongly agreed with the items; 1156 (45.9 per cent) of the responses disagreed or strongly disagreed with the items; 248 (9.9 per cent) of the responses had no opinion or decided a particular question did not apply to their school. These results indicated that teachers teaching in the Edmonton Public School System are undecided on the adequacy of the selected factors of design included in this study.

Teachers in rectangular original designs expressed 44.5 per cent agreement and 45.6 per cent disagreement with the twenty-six items. Respondents in circular original designs recorded 56.0 per cent agreement and 39.0 per cent disagreement with the items. Teachers in addition schools reported 37.5 per cent agreement and 50.3 per cent disagreement with the items.

Considering these figures, teachers in circular original schools indicated the highest agreement with the adequacy of the selected design factors included in the present study relative to 16 mm motion picture presentation in the open area. Teachers in addition designs expressed the highest percentage of disagreement in this regard. These results do not point out any pronounced difference in the adequacy of the

selected design factors. However, they tend to support the conclusion that the selected factors of design are most adequate for 16 mm motion picture utilization in circular original designs and least adequate in addition designs.

Years of Teacher Training The responses were analyzed by the years of teacher training of the respondents. The range of years of training was from one year to more than six years. One teacher, teaching in a circular original design had more than six years of training. Two teachers in rectangular original designs had one year of training; one teacher in an addition design had one year of training.

The majority of teachers responding had four years of training, 56.8 per cent of the total. Of this number, 52.9 per cent taught in rectangular original schools, 50.2 per cent taught in circular original schools, and 62.6 per cent taught in addition schools. From the results summarized on Table XXXII, no trends in responding, relative to years of teacher training can be detected. The teacher with more than six years of training recorded the highest percentage of agreement, 84.6 per cent. The next highest percentage of agreement was recorded by the three teachers with one year of training, 50.7 per cent. Teachers with four years of training recorded 43.6 per cent agreement with the items.

Teachers with two years of training recorded the highest percentage of disagreement, 51.2 per cent. Teachers having four years of training recorded 46.3 per cent disagreement with the items.

Total Years of Teaching Experience The range of total years of teaching experience was from no experience to more than twenty-five years of experience. The majority of the teachers responding had two

TABLE XXXII
TEACHER RESPONSE BY YEARS OF TEACHER TRAINING

Teacher Response to Selected Factors of Design	Years of Teacher Training												TOTAL				
	1 year		2 years		3 years		4 years		5 years		6 years						
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%			
R E C T A N G U A L A R	Strongly Agree	4	7.8	4	5.2	13	10.0	45	9.1	8	5.1	1	3.8	0	0.0	75	8.0
	Agree	28	54.9	24	31.2	49	37.7	166	33.6	63	40.4	11	42.3	0	0.0	341	36.5
	Disagree	13	25.5	20	26.0	26	20.0	111	22.5	35	22.4	9	34.6	0	0.0	214	22.9
	Strongly Disagree	5	9.8	18	23.4	23	17.7	123	24.9	41	26.3	2	7.7	0	0.0	212	22.7
	No Opinion	1	2.0	11	14.3	19	14.6	49	9.9	9	5.8	3	11.5	0	0.0	92	9.9
Total	51	5.5	77	8.2	130	13.9	494	52.9	156	16.7	26	2.8	0	0.0	934	100.0	
C I R C U L A R	Strongly Agree	0	0.0	0	0.0	9	17.3	17	6.5	23	14.9	0	0.0	1	3.8	50	9.7
	Agree	0	0.0	11	42.3	18	34.6	128	49.2	62	40.3	0	0.0	21	80.8	240	46.3
	Disagree	0	0.0	9	34.6	19	36.5	92	35.4	38	24.7	0	0.0	3	11.5	161	31.1
	Strongly Disagree	0	0.0	5	19.2	4	7.7	12	4.6	19	12.3	0	0.0	1	3.8	41	7.9
	No Opinion	0	0.0	1	3.8	2	3.8	11	4.2	12	7.8	0	0.0	0	0.0	26	5.0
Total	0	0.0	26	5.0	52	10.0	260	50.2	154	29.7	0	0.0	26	5.0	518	100.0	

TABLE XXXII (Continued)

Teacher Response to Selected Factors of Design	Years of Teacher Training																
	1 year		2 years		3 years		4 years		5 years		6 years		More Than 6 years				
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%			
	TOTAL																
A D D I T I O N	Strongly Agree	2	7.7	3	3.9	6	5.8	60	9.2	9	8.7	10	12.8	0	0.0	90	8.7
	Agree	5	19.2	22	28.6	30	28.8	190	29.2	26	25.0	26	33.3	0	0.0	99	28.8
	Disagree	6	23.1	26	33.8	20	19.2	136	20.9	28	26.9	23	29.5	0	0.0	239	23.0
	Strongly Disagree	9	34.6	14	18.2	34	32.7	183	28.2	32	30.8	12	15.4	0	0.0	284	27.3
	No Opinion	4	15.4	12	15.6	14	13.5	81	12.5	9	8.7	7	9.0	0	0.0	127	12.2
	Total	26	2.5	77	7.4	104	10.0	650	62.6	104	10.0	78	7.5	0	0.0	1039	100.0
C A T E G O R I E S A L L	Strongly Agree	6	7.8	7	3.9	28	9.8	122	8.5	40	9.7	11	10.6	1	3.8	215	8.5
	Agree	33	42.9	57	31.7	97	33.9	502	35.1	151	36.5	37	35.6	21	80.8	898	35.7
	Disagree	19	24.7	55	30.6	65	22.7	344	24.1	101	24.4	32	30.8	3	11.5	619	24.6
	Strongly Disagree	14	18.2	37	20.6	61	21.3	318	22.2	92	22.2	14	13.5	1	3.8	537	21.3
	No Opinion	5	6.5	24	13.3	35	12.2	144	10.1	30	7.2	10	9.6	0	0.0	248	9.9
	Total	77	3.1	180	7.2	286	11.4	1430	56.8	414	16.4	104	4.1	26	1.0	2517	100.0

to five years of teaching experience. These teachers comprised 30.9 per cent of the total population. Of this number 36.1 per cent taught in rectangular original schools, 20.1 per cent taught in circular original schools and 32.6 per cent taught in addition schools. Teachers with fifteen to twenty years of experience totaled only 3.1 per cent of the population. The highest percentage of agreement, according to the results reported on Table XXXIII, was recorded by teachers with fifteen to twenty years of experience, 52.6 per cent. This group comprises a very small number of the total number of responses. Teachers teaching for two or five years recorded 45.5 per cent agreement with the items. The highest percentage of disagreement was recorded by teachers who had taught from ten to fifteen years, 49.2 per cent. The teachers teaching between two and five years recorded 44.6 per cent disagreement with the items. A conclusion indicated is that a majority of the open area elementary school teachers have been teaching between two and five years. Their reaction to the items of the instrument, 45.5 per cent agreement and 44.6 per cent disagreement, is quite consistent with the response of the total population to the instrument, 44.2 per cent agreement and 45.9 per cent disagreement. Considering the reaction of the total population to the instrument no trends in the responses can be reported when analyzed by the total years of teaching experience.

Total Teaching Experience in Open Area Schools The total experience range began at zero and ended at ten years. One teacher, teaching in a rectangular original school had taught between five and ten years in an open area environment. The majority of the population

TABLE XXXIII

TEACHER RESPONSE BY TOTAL YEARS OF TEACHING EXPERIENCE

Teacher Response to Selected Factors of Design		Total Teaching Experience												TOTAL			
		0-2 Years		2-5 Years		5-10 Years		10-15 Years		15-20 Years		20-25 Years				More Than 25 years	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%			No.	%
RECTORIAN UNLARR	Strongly Agree	26	12.5	22	6.5	15	8.3	9	4.9	0	0.0	0	0.0	3	11.5	75	8.0
	Agree	74	35.6	128	38.0	55	30.4	77	42.3	0	0.0	0	0.0	7	26.9	341	36.5
	Disagree	28	13.5	87	25.8	40	22.1	53	29.1	0	0.0	0	0.0	6	23.1	214	22.9
	Strongly Disagree	55	26.4	67	19.9	60	33.1	26	14.3	0	0.0	0	0.0	4	15.4	212	22.7
	No Opinion	25	12.0	33	9.8	11	6.1	17	9.3	0	0.0	0	0.0	6	23.1	92	9.9
	Total	208	22.3	337	36.1	181	19.4	182	19.5	0	0.0	0	0.0	26	2.8	934	100.0
COURTULAR	Strongly Agree	5	2.7	12	11.5	25	19.2	0	0.0	0	0.0	4	15.4	4	8.0	50	9.7
	Agree	85	46.7	41	39.4	69	53.1	0	0.0	13	50.0	11	42.3	21	42.0	240	46.3
	Disagree	72	39.6	39	37.5	28	21.5	0	0.0	9	34.6	7	26.9	6	12.0	161	31.1
	Strongly Disagree	10	5.5	9	8.7	5	3.8	0	0.0	3	11.5	3	11.5	11	22.0	41	7.9
	No Opinion	10	5.5	3	2.9	3	2.3	0	0.0	1	3.8	1	3.8	8	16.0	26	5.0
	Total	182	35.1	104	20.1	130	25.1	0	0.0	26	5.0	26	5.0	50	9.7	518	100.0

TABLE XXXIII (Continued)

Teacher Response to Selected Factors of Design	Total Teaching Experience												TOTAL No. %				
	0-2 Years		2-5 Years		5-10 Years		10-15 Years		15-20 Years		20-25 Years				More Than 25 Years		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%			No.	%	
A D D I T I O N	Strongly Agree	8	3.8	27	8.0	21	11.5	4	5.1	11	21.2	16	15.5	3	3.8	90	8.7
	Agree	57	27.4	125	37.0	36	19.8	16	20.5	17	32.7	21	20.4	27	34.6	299	28.8
	Disagree	55	26.4	74	21.9	24	13.2	19	24.4	9	17.3	27	26.2	31	39.7	239	23.0
	Strongly Disagree	67	32.2	71	21.0	73	40.1	30	38.5	8	15.4	22	21.4	13	16.7	284	27.3
	No Opinion	21	10.1	41	12.1	28	15.4	9	11.5	7	13.5	17	16.5	4	5.1	127	12.2
	Total	208	20.0	338	32.6	182	17.5	78	7.5	52	5.0	103	9.9	78	7.5	1039	100.0
C A T E G O R I E S A L L	Strongly Agree	39	6.3	61	7.8	61	12.4	13	5.0	11	14.1	20	15.5	10	6.5	215	8.5
	Agree	234	37.5	294	37.7	160	32.5	93	35.8	30	38.5	32	24.8	55	35.7	898	25.7
	Disagree	160	25.6	200	25.7	92	18.7	72	27.7	18	23.1	34	26.4	43	27.9	619	24.6
	Strongly Disagree	132	21.2	147	18.9	138	28.0	56	21.5	11	14.1	25	19.4	28	18.2	537	21.3
	No Opinion	59	9.5	77	9.9	42	8.5	26	10.0	8	10.3	18	14.0	18	11.7	248	9.9
	Total	624	24.8	779	30.9	493	19.6	260	10.3	78	3.1	129	5.1	154	6.1	2517	100.0

66.1 per cent had from zero to two years of experience in open area schools. The remaining respondents, or 32.9 per cent, had taught in such an environment from two to five years. Of all the teachers in the rectangular original schools, 63.9 per cent had from zero to two years of teaching experience. These teachers recorded 46.9 per cent agreement and 42.0 per cent disagreement with the items of the instrument. The 55.2 per cent of the teachers in circular open area schools who had zero to two years of experience in such environments, recorded 58.1 per cent agreement and 37.4 per cent disagreement with the items. Teachers in circular original schools tended to have more experience in such environments. Teachers in addition schools with zero to two years of experience in open areas, recorded 36.5 per cent agreement and 51.4 per cent disagreement with the items. Of the population in the addition schools, 72.6 per cent had taught from zero to two years in an open area environment.

Considering the total population of the study, the percentages of agreement and disagreement with the items reveal no appreciable variations relative to the length of time the respondents had taught in open areas. Teachers teaching in open areas from zero to two years recorded 44.5 per cent agreement and 45.2 per cent disagreement; teachers with two to five years of experience recorded 44.0 per cent agreement and 47.5 per cent disagreement; the teacher with more than five years of experience recorded 38.5 per cent agreement and 46.2 per cent disagreement. Table XXXIV summarizes the responses of the teachers relative to total years of experience in open area schools.

TABLE XXXIV

TEACHER RESPONSE BY TOTAL TEACHING EXPERIENCE
IN OPEN AREA SCHOOLS

	Teacher Response to Selected Factors of Design	Total Experience in Open Area Schools							
		0-2 Years		2-5 Years		5-10 Years		TOTAL	
		No.	%	No.	%	No.	%	No.	%
R E C T A G N I G U A L A R	Strongly Agree	49	7.5	30	9.6	0	0.0	75	8.0
	Agree	239	39.4	96	30.9	10	38.5	341	36.5
	Disagree	122	20.4	80	25.7	12	46.2	214	22.9
	Strongly Disagree	129	21.6	83	26.7	0	0.0	212	22.7
	No Opinion	66	11.1	22	7.1	4	15.4	92	9.9
	Total	597	63.9	311	33.3	26	2.8	934	100.0
C O R R I G U N A L R	Strongly Agree	32	11.2	18	7.8	0	0.0	50	9.7
	Agree	134	46.9	106	45.7	0	0.0	240	46.3
	Disagree	94	32.9	67	28.9	0	0.0	161	31.1
	Strongly Disagree	13	4.5	28	12.1	0	0.0	41	7.9
	No Opinion	13	4.5	13	5.6	0	0.0	26	5.0
	Total	286	55.2	232	44.8	0	0.0	518	100.0

TABLE XXXIV (Continued)

	Teacher Response to Selected Factors of Design	Total Experience in Open Area Schools							
		0-2 Years		2-5 Years		5-10 Years		TOTAL	
		No.	%	No.	%	No.	%	No.	%
A D D I T I O N S	Strongly Agree	57	7.6	33	11.6	0	0.0	90	8.7
	Agree	218	28.9	81	28.4	0	0.0	299	28.8
	Disagree	169	22.4	70	24.6	0	0.0	239	23.0
	Strongly Disagree	219	29.0	65	22.8	0	0.0	284	27.3
	No Opinion	91	12.1	36	12.6	0	0.0	127	12.2
	Total	754	72.6	285	27.4	0	0.0	1039	100.0
A L L C A T E G O R I E S	Strongly Agree	134	8.1	81	9.8	0	0.0	215	8.5
	Agree	605	36.4	283	34.2	10	38.5	898	35.7
	Disagree	390	23.5	217	26.2	12	46.2	619	24.6
	Strongly Disagree	361	21.7	176	21.3	0	0.0	537	21.3
	No Opinion	173	10.4	71	8.6	4	15.4	248	9.9
	Total	1663	66.1	828	32.9	26	1.0	2517	100.0

TABLE XXXV

TEACHER RESPONSE BY TOTAL TEACHING EXPERIENCE IN
THE PRESENT SCHOOL

	Teacher Reponse to Selected Factors of Design	Total Experience in Present School							
		0-2 Years		2-5 Years		5-10 Years		TOTAL	
		No.	%	No.	%	No.	%	No.	%
R E O C R T I A G N I G N U A L L A R	Strongly Agree	49	8.2	26	8.4	0	0.0	75	8.0
	Agree	239	40.0	92	29.6	10	38.5	341	36.5
	Disagree	120	20.1	82	26.4	12	46.2	214	22.9
	Strongly Disagree	126	21.1	86	27.7	0	0.0	212	22.7
	No Opinion	63	10.6	25	8.0	4	15.4	92	9.9
	Total	597	63.9	311	33.3	26	2.8	934	100.0
C O I R I C G U I L N A A R L	Strongly Agree	36	11.5	14	7.8	0	0.0	50	9.7
	Agree	143	45.8	85	47.2	12	46.2	240	46.3
	Disagree	104	33.3	47	26.1	10	38.5	161	31.1
	Strongly Disagree	15	4.8	22	12.2	4	15.4	41	7.9
	No Opinion	14	4.5	12	6.7	0	0.0	26	5.0
	Total	312	60.2	180	34.8	26	5.0	518	100.0

TABLE XXXV (Continued)

	Teacher Response to Selected Factors of Design	Total Experience in Present School							
		0-2 Years		2-5 Years		5-10 Years		TOTAL	
		No.	%	No.	%	No.	%	No.	%
A D D I T I O N	Strongly Agree	35	5.6	36	17.3	19	9.2	90	8.7
	Agree	175	28.0	64	30.8	60	29.0	299	28.8
	Disagree	141	22.6	43	20.7	55	26.6	239	23.0
	Strongly Disagree	195	31.3	40	19.2	49	23.7	284	27.3
	No Opinion	78	12.5	25	12.0	24	11.6	127	12.2
	Total	624	60.1	208	20.0	207	19.9	1039	100.0
A L L O R I E S	Strongly Agree	120	7.7	76	10.9	19	8.2	215	8.5
	Agree	575	36.9	241	34.5	82	31.7	898	35.7
	Disagree	370	23.7	172	24.6	77	29.7	619	24.6
	Strongly Disagree	336	21.6	148	21.1	53	18.4	537	21.3
	No Opinion	158	10.1	62	8.9	28	12.0	248	9.9
	Total	1559	61.9	699	27.8	259	10.3	2517	100.0

Completion of an Audiovisual Communications Course Of the

respondents, 28.9 per cent had completed an audiovisual communications course; 71.1 per cent had not completed such a course. Circular original schools had the highest percentage of teachers who had completed an audiovisual course, 40.2 per cent. Three-quarters or 75.0 per cent of the teachers in addition schools had not completed such a course. Considering the total responses no trend in agreement and disagreement can be noted relative to this teacher information factor. Teachers who had completed an audiovisual course recorded 46.1 per cent agreement and 42.9 per cent disagreement. Teachers who had not completed such a course recorded 43.2 per cent agreement and 47.2 per cent disagreement with the items of the instrument. Table XXXVI summarizes the results relative to completion of an audiovisual communications course.

Present Enrolment in an Audiovisual Communications Course

Considering all the respondents, 5.2 per cent were presently enrolled in an audiovisual communications course. This percentage is consistent with all the design categories. Of the number enrolled, 44.6 per cent recorded agreement with the items; 46.9 per cent recorded disagreement with the items. No differences appear to exist between the responses of those teachers presently enrolled in audiovisual courses and those not enrolled in such courses. Some teachers in the latter group may have completed audiovisual courses. Of the group not presently enrolled, 43.2 per cent expressed agreement and 45.9 per cent recorded disagreement with the items. Table XXXVII summarizes the responses of the teachers when analyzed by present enrolment in audiovisual communications courses.

TABLE XXXVI

TEACHER RESPONSE BY COMPLETION OF AN AUDIOVISUAL
COMMUNICATIONS COURSE

	Teacher Response to Selected Factors of Design	Completion					
		Yes		No		TOTAL	
		No.	%	No.	%	No.	%
R E C T A N G U L A R	Strongly Agree	23	9.8	52	7.4	75	8.0
	Agree	96	41.0	245	35.0	341	36.5
	Disagree	46	19.7	168	24.0	214	22.9
	Strongly Disagree	45	19.2	167	23.9	212	22.7
	No Opinion	24	10.3	68	9.7	92	9.9
	Total	234	25.1	700	74.9	934	100.0
C I R C U L A R	Strongly Agree	23	11.1	27	8.7	50	9.7
	Agree	95	45.7	145	46.8	240	46.3
	Disagree	56	26.9	105	33.9	161	31.1
	Strongly Disagree	20	9.6	21	6.8	41	7.9
	No Opinion	14	6.7	12	3.9	26	5.0
	Total	208	40.2	310	59.8	518	100.0

TABLE XXXVI (Continued)

	Teacher Response to Selected Factors of Design	Completion					
		Yes		No		TOTAL	
		No.	%	No.	%	No.	%
A D D I T I O N	Strongly Agree	14	5.4	76	9.8	90	8.7
	Agree	67	25.8	232	29.8	299	28.8
	Disagree	51	19.6	188	24.1	239	23.0
	Strongly Disagree	89	34.2	195	25.0	284	27.3
	No Opinion	39	15.0	88	11.3	127	12.2
	Total	260	25.0	779	75.0	1039	100.0
A L L O R I E S	Strongly Agree	60	8.2	155	8.7	215	8.5
	Agree	276	37.9	622	34.8	898	35.7
	Disagree	158	21.7	461	25.8	619	24.6
	Strongly Disagree	154	21.2	383	21.4	537	21.3
	No Opinion	80	11.0	168	9.4	248	9.9
	Total	728	28.9	1789	71.1	2517	100.0

The results of the teachers responding to the twenty-six items referring to the existing design were analyzed by the factors of completion of or present enrolment in audiovisual communications courses for two reasons. Usually audiovisual courses introduce prospective teachers to media equipment operation. Teachers who have successfully completed an audiovisual communications course will have had some instruction and possibly some experience at university in operating audiovisual equipment.

In addition to introducing education students to equipment operation, audiovisual communications classes discuss school facilities from an audiovisual viewpoint. Students become familiar with standards for classroom facilities and ways of improving inadequate facilities. Factors of flexibility, classroom lighting and ventilation, acoustical control, screen placement, and storage are studied. For these reasons, the data from the responses of the teachers were analyzed by the factors of completion of audiovisual courses and present enrolment in such courses. No appreciable differences in agreement or disagreement with the items of the instrument were discovered between either the group who had or had not completed or the group who were or were not enrolled in audiovisual courses.

The Average Number of Times Teachers Used The 16 MM Motion Picture Projector Per Week The results from the twenty-six items referring to the existing conditions of the selected factors of school design included in this study were analyzed by the average number of times teachers used the 16 mm motion picture projector for two reasons. It was necessary to determine that teachers responding did use the 16 mm motion picture projector. It was also necessary to determine if any

TABLE XXXVII

TEACHER RESPONSE BY PRESENT ENROLMENT IN
AUDIOVISUAL COMMUNICATIONS COURSES

	Teacher Response to Selected Factors of Design	Enrolment					
		Yes		No		TOTAL	
		No.	%	No.	%	No.	%
R E C T I A G N I G U A L A R	Strongly Agree	7	13.5	68	7.7	75	8.0
	Agree	11	21.2	330	37.4	341	36.5
	Disagree	9	17.3	205	23.2	214	22.9
	Strongly Disagree	19	36.5	193	21.9	212	22.7
	No Opinion	6	11.5	86	9.8	92	9.8
	Total	52	5.6	882	94.4	934	100.0
C O I R I C G U I L N A A R L	Strongly Agree	1	3.8	49	10.0	50	9.7
	Agree	21	80.7	219	44.5	240	46.3
	Disagree	3	11.5	158	32.1	161	31.1
	Strongly Disagree	1	3.8	40	8.1	41	7.9
	No Opinion	0	0.0	26	5.3	26	5.0
	Total	36	5.0	492	95.0	518	100.0

TABLE XXXVII (Continued)

	Teacher Response to Selected Factors of Design	Enrolment					
		Yes		No		TOTAL	
		No.	%	No.	%	No.	%
A D D I T I O N	Strongly Agree	6	11.5	84	8.5	90	8.7
	Agree	12	23.1	287	29.1	299	28.8
	Disagree	9	17.3	230	23.3	239	23.0
	Strongly Disagree	20	38.5	264	26.7	284	27.3
	No Opinion	5	9.6	122	12.4	127	12.2
	Total	52	5.0	987	95.0	1039	100.0
C A T E G O R I E S	Strongly Agree	14	10.8	201	8.4	215	8.5
	Agree	44	33.8	854	35.8	898	35.7
	Disagree	21	16.2	598	25.1	619	24.6
	Strongly Disagree	40	30.7	497	20.8	537	21.3
	No Opinion	11	8.5	237	9.9	248	9.9
	Total	130	5.2	2387	94.8	2517	100.0

trends in responding related to the average number of times per week the teachers used the medium. From the results summarized on Table XXXVIII, 30.0 per cent of the respondents did not use the medium once a week on the average, 68.0 per cent used the medium one to five times per week and 2.0 per cent used the medium five to ten times per week. No one used the medium more than ten times per week. The 30.0 per cent who did not use the 16 mm motion picture medium at least once a week on the average, could use the medium at some time during the month or school year.

The majority of the respondents used the medium, on the average, one to five or five to ten times per week. Considering the former group, 49.1 per cent recorded agreement with the items and 41.6 per cent recorded disagreement. Considering the group that uses the 16 mm motion picture projector medium from five to ten times per week on the average, 36.6 per cent expressed agreement with the items and 59.6 per cent recorded disagreement. This finding appears contradictory; however, a small proportion, 2.0 per cent, were in this group. Considering the total responses, no important differences between the total percentage of agreement (44.2 per cent) and the total percentage of disagreement (47.9 per cent) which relate to the average number of times per week the respondents used the 16 mm motion picture medium existed.

Age of the Respondents The results from the twenty-six items were analyzed by the factor of age of the teachers to determine if any trends in the percentage of agreement and disagreement could be attributed to the age of the respondents. Respondents in the thirty-one to thirty-five category recorded the highest percentage of agreement,

TABLE XXXVIII

TEACHER RESPONSE BY AVERAGE NUMBER OF TIMES
PER WEEK TEACHERS USED THE 16 MM MOTION
PICTURE MEDIUM

	Teacher Response to Selected Factors of Design	Average number of times per week							
		0		1-5		5-10		TOTAL	
		No.	%	No.	%	No.	%	No.	%
R E C T A G N I U A L A R	Strongly Agree	15	11.5	60	7.5	0	0.0	75	8.0
	Agree	32	24.6	309	38.4	0	0.0	341	36.5
	Disagree	29	22.3	185	23.0	0	0.0	214	22.9
	Strongly Disagree	47	36.2	165	20.5	0	0.0	212	22.7
	No Opinion	7	5.4	85	10.6	0	0.0	92	100.0
	Total	130	13.9	804	86.1	0	0.0	934	100.0
C O I R I C G U I L N A A R L	Strongly Agree	0	0.0	46	10.5	4	15.4	50	9.7
	Agree	22	42.3	209	47.5	9	34.6	240	46.3
	Disagree	26	50.0	125	28.4	10	38.5	161	31.1
	Strongly Disagree	3	5.8	36	8.1	2	7.7	41	7.9
	No Opinion	1	1.9	24	5.5	1	3.8	26	5.0
	Total	52	10.0	440	85.0	26	5.0	518	100.0

TABLE XXXVIII (Continued)

	Teacher Response to Selected Factors of Design	Average Number of Times Per Week							
		0		1-5		5-10		TOTAL	
		No.	%	No.	%	No.	%	No.	%
A D D I T I O N	Strongly Agree	49	8.6	40	9.0	1	3.8	90	8.7
	Agree	135	23.6	159	36.1	5	19.2	299	28.8
	Disagree	118	20.6	115	26.1	6	23.2	239	23.0
	Strongly Disagree	191	33.4	80	18.1	13	50.0	284	27.3
	No Opinion	79	13.8	47	10.7	1	3.8	127	12.2
	Total	572	55.1	441	42.4	26	2.5	1039	100.0
C A T E G O R I E S	Strongly Agree	64	8.5	146	8.5	5	9.7	215	8.5
	Agree	189	25.1	695	40.6	14	26.9	898	35.7
	Disagree	173	22.9	430	25.2	16	30.8	619	24.6
	Strongly Disagree	241	32.0	281	16.4	15	28.8	537	21.3
	No Opinion	87	11.5	159	9.3	2	3.8	248	9.9
	Total	754	30.0	1711	68.0	52	2.0	2517	100.0

52.1 per cent. This age group was 10.3 per cent of the total population of all the respondents, 33.4 per cent were between the ages of twenty-one and twenty-five. This group contained the highest percentage of teachers responding. The group expressed agreement to 42.7 per cent of the items. These figures are consistent with the percentages for agreement and disagreement, 43.2 per cent and 45.8 per cent respectively, when all responses are considered. The teachers in the eighteen to twenty age group expressed the highest percentage of disagreement with the items, 69.3 per cent. However, a small proportion of the respondents were in this group. Table XXXIX summarizes the responses of the teachers when analyzed by the factor or age. No trends in responding can be attributed to the factor of teacher age.

VI. EVALUATION

Items fourteen, thirty and forty-one of the survey instrument have been included under the heading of evaluation. For each item the teacher was required to evaluate the lighting and acoustical controls in the open area relative to the utilization of the 16 mm motion picture medium. The results from item fourteen, summarized on Table XL, indicated that 43 (44.4 per cent) of the respondents agreed that the lighting and acoustical controls were adequate for 16 mm motion picture presentation in the open area. Fifty-four (55.6 per cent) of the teachers disagreed with this item.

TABLE XXXIX

TEACHER RESPONSE BY AGE OF THE RESPONDENTS

	Teacher Response to Selected Factors of Design	Age														Total			
		18-20		21-25		26-30		31-35		36-40		41-45		46-50				51-60	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%			No.	%
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
R E C T I A N G U A L	Strongly Agree	0	0.0	36	11.5	20	5.9	17	11.0	2	3.8	0	0.0	0	0.0	0	0.0	75	8.0
	Agree	0	0.0	104	33.3	131	38.9	57	36.8	19	36.5	30	38.5	0	0.0	0	0.0	341	36.5
	Disagree	0	0.0	55	17.6	66	19.6	47	30.3	16	30.8	30	38.5	0	0.0	0	0.0	214	22.9
	Strongly Disagree	0	0.0	82	26.4	94	27.9	19	12.3	10	19.2	7	9.0	0	0.0	0	0.0	212	22.7
	No Opinion	0	0.0	35	11.2	26	7.7	15	9.6	5	9.7	11	14.0	0	0.0	0	0.0	92	9.9
	Total	0	0.0	312	33.4	337	36.1	155	16.6	52	5.6	78	8.3	0	0.0	0	0.0	934	100.0
C I R I C U L A R	Strongly Agree	0	0.0	5	3.2	16	10.3	7	9.0	14	53.8	4	15.4	4	16.7	0	0.0	50	9.7
	Agree	0	0.0	74	47.4	61	39.1	50	64.1	10	38.4	11	42.3	13	54.1	21	40.4	240	46.3
	Disagree	0	0.0	63	40.4	58	37.2	17	21.8	1	3.8	7	26.9	3	12.5	12	23.1	161	31.1
	Strongly Disagree	0	0.0	5	3.2	16	10.3	3	3.8	0	0.0	3	11.5	0	0.0	14	26.9	41	7.9
	No Opinion	0	0.0	9	5.8	5	3.1	1	1.3	1	3.8	1	3.8	4	16.7	5	9.6	26	5.0
	Total	0	0.0	156	30.1	156	30.1	78	15.1	26	5.0	26	5.0	24	4.6	52	10.0	518	100.0

TABLE XXXIX (Continued)

	Teacher Response to Selected Factors of Design	Age																Total	
		18-20		21-25		26-30		31-35		36-40		41-45		46-50		51-60			
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
A D D I T I O N	Strongly Agree	1	3.8	18	4.9	28	12.0	1	3.8	19	18.3	7	13.5	13	10.1	3	3.8	90	8.9
	Agree	5	19.2	118	32.4	51	21.8	8	30.8	33	31.7	14	26.9	28	21.7	32	41.0	289	28.5
	Disagree	10	38.5	87	23.9	32	13.7	6	23.1	18	17.3	12	23.1	38	29.5	29	37.2	232	22.9
	Strongly Disagree	8	30.8	99	27.2	85	36.3	10	38.5	19	18.3	14	26.9	29	22.5	11	14.2	275	22.7
	No Opinion	2	7.7	42	11.5	38	16.2	1	3.8	15	14.4	5	9.6	21	16.2	3	3.8	127	12.5
	Total	26	2.6	364	35.9	234	23.1	26	2.6	104	10.3	52	5.1	129	12.7	78	7.7	1013	100.0
C A T E G O R I E S	Strongly Agree	1	3.8	59	7.1	64	8.5	25	9.7	35	19.2	11	7.1	17	11.1	3	2.3	215	8.6
	Agree	5	19.2	296	35.6	261	34.7	115	44.4	62	34.1	55	35.3	41	26.8	53	40.8	888	35.6
	Disagree	10	38.5	205	24.6	161	21.4	70	27.0	35	19.2	49	31.4	41	26.8	41	31.5	612	24.6
	Strongly Disagree	8	30.8	186	22.4	195	25.9	32	12.4	29	15.9	24	15.4	29	18.9	25	19.2	528	21.2
	No Opinion	2	7.7	86	10.3	72	9.5	17	6.5	21	11.6	17	10.9	25	16.3	8	6.2	248	10.0
	Total	26	1.0	832	33.4	753	30.2	259	10.4	182	7.3	156	6.3	153	6.2	130	5.2	2491	100.0

TABLE XL

THE ADEQUACY OF LIGHTING AND ACOUSTICAL
CONTROLS FOR 16 MM MOTION PICTURE
PRESENTATION IN THE OPEN AREA

Item Fourteen: For your practical purposes, lighting controls and acoustical controls are adequate for 16 mm motion picture presentation in the open area.

	Teacher Response	Total	
		Number	Per Cent
C A T E A L L G O R I E S	Strongly Agree	7	7.2
	Agree	36	37.2
	Disagree	26	26.8
	Strongly Disagree	28	28.8
	No Opinion	0	0.0
	Total	97	100.0

Item thirty compared the lighting and acoustical conditions in the open area with those in a self contained classroom that might be used for 16 mm motion picture presentation. Thirty-four (35.0 per cent) of the teachers felt they would use their teaching stations whereas, 53 (54.7 per cent) would use a self contained classroom for film use. The results from item thirty are summarized in Table XLI.

TABLE XLI

COMPARISON OF SELECTED DESIGN FACTORS IN THE TEACHING
STATION AND THE SELF CONTAINED CLASSROOM
FOR 16 MM MOTION PICTURE PRESENTATION

Item Thirty: Since controls for light and sound are adequate for 16 mm motion picture presentation in your teaching station, you seldomly use a self-contained classroom for this purpose.

C A T E G O R I E S	Total		
	Teacher Response	Number	Per Cent
	Strongly Agree	11	11.3
	Agree	23	23.7
	Disagree	30	31.0
	Strongly Disagree	23	23.7
	No Opinion	10	10.3
	Total	97	100.0

Table XLII summarizes the responses from item forty-one of the instrument. Sixty-two (63.9 per cent) of the respondents agreed that they could project a 16 mm motion picture at their teaching station when it was educationally justified. Thirty-four (34.0 per cent) disagreed with the item. These responses tend to contradict those from items fourteen and thirty.

Considering the three items, the results tend to indicate that teachers would project a 16 mm motion picture at their teaching station if an alternative facility, which provided better control of lighting and sound, was not available.

TABLE XLII

THE ADEQUACY OF THE TEACHING STATION FOR PROJECTING 16 MM
MOTION PICTURE WHEN IT IS EDUCATIONALLY JUSTIFIED

Item Forty-One: You can project a 16 mm motion picture, whenever it is educationally justified, at your teaching station.

	Teacher Response	Total	
		Number	Per Cent
C A T E L L O R I E S	Strongly Agree	9	9.3
	Agree	53	54.6
	Disagree	20	20.6
	Strongly Disagree	14	14.4
	No Opinion	1	1.0
	Total	97	100.0

VII. ORGANIZATION

Items twenty-eight and twenty-nine referred to the organization of the timetable relative to the separation of classes or combination of classes during a 16 mm motion picture presentation. Table XLIII reports the results of item twenty-eight. This statement referred to the separation of classes during a 16 mm motion picture presentation. Thirteen (13.4 per cent) of the respondents agreed that their timetable was organized so that classes normally adjacent to the respondents teaching station would be in other areas of the school (e.g., gymnasium) during a 16 mm motion picture presentation in the respondent's teaching station. Sixty-five (66.0 per cent) of the teachers disagreed with this item.

TABLE XLII
TIMETABLE SEPARATION

Item Twenty-Eight: The school timetable is organized so that classes normally adjacent to your class will be in other areas of the school (e.g. gymnasium) during a 16 mm motion picture presentation in your teaching station.

	Teacher Response	Total	
		Number	Per Cent
C A T E L G L O R I E S	Strongly Agree	0	0.0
	Agree	13	13.4
	Disagree	44	45.4
	Strongly Disagree	21	21.6
	No Opinion	19	19.6
	Total	97	100.0

Table XLIV summarizes the results for item twenty-nine which referred to the organization of the school timetable such that it permitted the combination of adjacent classes for a 16 mm motion picture presentation. Eighty-nine (91.6 per cent) agreed with this item. Six (6.2 per cent) disagreed with the statement.

Considering the results of both questions it appears that timetable organization in the open area favors the combination of adjacent classes. This finding is consistent with the philosophies of the open areas, which are sometimes referred to as team teaching or cooperative teaching areas. The statements were included to determine the flexibility of the timetable in allowing for the re-distribution of classes

during 16 mm motion picture presentation. Such re-distribution may allow teachers to utilize this medium in the light of acoustical or lighting control problems that would arise if classes could not be re-grouped.

TABLE XLIV

TIMETABLE COMBINATION

Item Twenty-Nine: The school timetable is organized so that two or more classes taking the same subject can be combined in one teaching station for large group presentation of a 16 mm motion picture.

	Teacher Response	Total	
		Number	Per Cent
C A T E A L L G O R I E S	Strongly Agree	25	25.8
	Agree	64	65.9
	Disagree	6	6.2
	Strongly Disagree	0	0.0
	No Opinion	2	2.1
	Total	97	100.0

VIII. INNOVATION

Ten items of the survey instrument were designed and included as suggestions for change in present and future designs that might allow greater utilization of audiovisual media, especially the 16 mm motion picture medium, in open areas.

The inclusion of statistical analysis was not the overall purpose of the present study. However, as an aid to future investigations of open area design or to school boards exploring the recommendations of this study, chi square statistical analysis was applied to the innovation portion of the data. An attempt was made to determine if the responses the teachers recorded on the innovation items were statistically significant or if they had occurred by chance. The chi square test was selected since the data were reported and classified into frequencies. In the present case an a priori hypothesis assuming equal frequencies was postulated.

The data obtained were on a continuum which ranged from "strongly agree", "agree", "disagree", to "strongly disagree". For the purposes of this study, "strongly agree" and "agree" responses were grouped because these indicated generally favorable opinions. The "disagree" and "strongly disagree" responses, indicating a generally unfavorable response, were grouped. The "no opinion" responses were ignored for statistical analysis.

The one per cent level of significance was set as the criterion of significance. With one degree of freedom, a chi square value of 6.635 is required at the one per cent level of significance.

Table XLV reports the findings of item thirty-one which suggested the inclusion of moveable, floor to ceiling, opaque partitions between teaching stations. Fifty-five (56.6 per cent) of the teachers agreed with this suggestion. Eighteen (18.6 per cent) disagreed with item thirty-one. A chi square value of 18.753 was obtained. The observed value of chi square was greater than the criterion of significance (6.635, at the one per cent level), therefore, the difference in

TABLE XLV

MOVEABLE, FLOOR TO CEILING, OPAQUE
PARTITION INNOVATION

Item Thirty-One: Moveable floor to ceiling, opaque partitions between teaching stations would be adequate to control light and sound during a 16 mm motion picture presentation.

	Teacher Response	Total	
		Number	Per Cent
C A T E G O R I E S	Strongly Agree	14	14.4
	Agree	41	42.2
	Disagree	15	15.5
	Strongly Disagree	3	3.1
	No Opinion	24	24.8
	Total	97	100.0

opinion is statistically significant.

Eighty-three (85.5 per cent) of the respondents agreed with item thirty-two which suggested the inclusion of some type of listening center device in the open area design. The results, summarized in Table XLVI show that 10 (10.3 per cent) disagreed with this item. The observed value of chi square (57.301) was markedly higher than the selected criterion of significant (6.635) at the one per cent level. Considering this information, the difference in opinion is highly significant.

TABLE XLVI
LISTENING CENTER DEVICE INNOVATION

Item Thirty-Two: Some type of listening center device should be built into the open area of your school so that students can listen to the sound track without having it disturb other classes.

	Teacher Response	Total	
		Number	Per Cent
C A T E A L G L O R I E S	Strongly Agree	44	45.4
	Agree	39	40.2
	Disagree	8	8.2
	Strongly Disagree	2	2.1
	No Opinion	4	4.1
	Total	97	100.0

Item thirty-three suggested that more flexibility be built into the electrical light switch controls. The results, summarized in Tabel XLVII indicated that 65 (67.0 per cent) expressed agreement. Twenty-four (24.7 per cent) disagreed that such a change was necessary. A value of 18.889 was obtained when the responses were subjected to the chi square test. Considering the criterion of significance (6.635) the conclusion can be made that the differences in opinion are significant at the one per cent level.

TABLE XLVII
NEED FOR INCREASED LIGHT
SWITCH FLEXIBILITY

Item Thirty-Three: More flexibility should have been built into the electric light switch controls in the open area of your school.

	Teacher Response	Total	
		Number	Per Cent
A L L C A T E G O R I E S	Strongly Agree	26	26.8
	Agree	39	40.2
	Disagree	20	20.6
	Strongly Disagree	4	4.1
	No Opinion	8	8.3
	Total	97	100.0

The installation of permanent two or three foot partitions, hanging from the ceiling between teaching stations to control artificial light was suggested in item thirty-four. Fifty-seven (58.7 per cent) of the respondents agreed with this suggestion. Twenty-two (22.7 per cent) of the teachers disagreed with this item. The results of item thirty-four are summarized on Table XLVIII. It should be noted that some schools included in this study already have such installations between each row of fluorescent lights in the open area. A chi square value of 15.506 was obtained. This value indicates that differences in opinion of the teachers responding are significant statistically at the one per

cent level.

TABLE XLVIII

PARTITIONS HANGING FROM THE
CEILING INNOVATION

Item Thirty-Four: Permanent two or three foot partitions, hanging from the ceiling between teaching stations, would aid in controlling light that filters into the darkened area from adjacent teaching stations or from the hallway.

	Teacher Response	Total	
		Number	Per Cent
C A T E A L L O R I E S	Strongly Agree	13	13.4
	Agree	44	45.3
	Disagree	18	18.6
	Strongly Disagree	4	4.1
	No Opinion	18	18.6
	Total	97	100.0

Seventy-four (76.2 per cent) of the respondents agreed that open area schools should have a projection room where lighting and acoustics can be completely controlled. The results, tabulated in Table XLIX, show that 22 (22.8 per cent) disagreed with this item. A value of 26.500 was observed when the responses to the projection room innovation were analyzed. Since the criterion of significance was 6.635, this value can be considered highly significant at the one per cent level.

TABLE XLIX

PROJECTION ROOM INNOVATION

Item Thirty-Five: A projection room, where lighting and sound can be completely controlled, is necessary in open area schools.

		Total	
Teacher Response		Number	Per Cent
C A T E G O R I E S	Strongly Agree	37	38.1
	Agree	37	38.1
	Disagree	18	18.7
	Strongly Disagree	4	4.1
	No Opinion	1	1.0
Total		97	100.0

Item thirty-six referred to the addition of dimming or rheostat controls to the artificial lighting to allow students sufficient indirect illumination for taking notes during a 16 mm motion picture presentation. The results, summarized in Table L, indicated that 75 (77.3 per cent) agreed and 15 (15.4 per cent) disagreed with this item. A chi square value of 40.000 was obtained. This finding supports the conclusion that the differences in opinion of the teachers, relative to the rheostat control innovation, are highly significant at the one per cent level.

Item thirty-seven advocated the inclusion of Venetian blinds built between two panes of glass as the natural lighting control for future open area schools. The results are inconclusive on this point when the high number of no opinion responses, 39 (40.2 per cent) is

considered. The results indicated that at least 40.2 per cent are not familiar with this type of natural lighting control facility. Of the respondents who had an opinion, 34 (35.1 per cent) agreed and 24 (24.7 per cent) disagreed with this item. The results are summarized on Table LI. A chi square value of 1.724 was observed. The observed value of chi square was less than the criterion of significance selected (6.635), therefore, there is no significant difference at the one per cent level in the opinions of the teachers relative to item thirty-seven.

TABLE L
RHEOSTAT CONTROL INNOVATION

Item Thirty-Six: Dimming controls on lights are necessary if students are expected to take notes during a 16 mm motion picture presentation.

	Teacher Response	Total	
		Number	Per Cent
A L L C A T E G O R I E S	Strongly Agree	24	24.7
	Agree	51	52.6
	Disagree	14	14.4
	Strongly Disagree	1	1.0
	No Opinion	7	7.3
	Total	97	100.0

TABLE LI
VENETIAN BLINDS BETWEEN GLASS
INNOVATION

Item Thirty-Seven: If Venetian blinds, built between two panes of glass with an accessible control knob for opening and closing had been used in your school, better control of natural light would result.

	Teacher Response	Total	
		Number	Per Cent
A L L O R I E S	Strongly Agree	9	9.3
	Agree	25	25.8
	Disagree	20	20.6
	Strongly Disagree	4	4.1
	No Opinion	39	40.2
	Total	97	100.0

Seventy-eight (80.4 per cent) of the respondents agreed with item thirty-eight. This innovation suggested the addition of opaque, floor to ceiling, fireproof and sound absorbing curtains to open area designs. These curtains could be drawn around a teaching station during a 16 mm motion picture presentation. From the results 9 (9.3 per cent) of the respondents disagreed with this item. The results are summarized on Table LII. A value of 58.597 was observed when the opinion responses were subjected to the chi square test. This finding supports the conclusion that the differences in the opinions of the teachers relative to the installation of opaque, floor to ceiling, fireproof and sound absorbing curtains are highly significant at the one per cent level.

TABLE LII

OPAQUE, FLOOR TO CEILING, FIREPROOF AND SOUND
ABSORBING CURTAINS

Item Thirty-Eight: Opaque, floor to ceiling, fireproof and sound absorbing curtains, that could be drawn around your teaching station during a 16 mm motion picture presentation would control light and sound more adequately than at present.

	Teacher Response	Total	
		Number	Per Cent
A L L O R I E S	Strongly Agree	23	23.7
	Agree	55	56.7
	Disagree	8	8.3
	Strongly Disagree	1	1.0
	No Opinion	10	10.3
	Total	97	100.0

Item thirty-nine suggested that better quality acoustic materials should have been used in the construction of open areas. Fifty-three (54.6 per cent) of the respondents agreed to the item. Table LIII summarizes the results and shows that 19 or 19.6 per cent disagreed with the statement. A chi square value of 16.055 was observed. This value is greater than the value selected as the criterion of significance (6.635). The conclusion can be drawn that the differences in opinion to item thirty-nine are statistically significant at the one per cent level.

TABLE LIII

NEED FOR BETTER QUALITY ACOUSTIC MATERIALS IN
TEACHING STATION CONSTRUCTION

Item Thirty-Nine: Better quality acoustic materials should have been used in the construction of your teaching station.

	Teacher Response	Total	
		Number	Per Cent
A L L C A T E G O R I E S	Strongly Agree	21	21.6
	Agree	32	33.0
	Disagree	19	19.6
	Strongly Disagree	0	0.0
	No Opinion	25	25.8
	Total	97	100.0

Of all the respondents, 69 (70.0 per cent) agreed that acoustic tile should be placed on bare walls. Responses to item forty, summarized in Table LIV, indicated that 9 (9.3 per cent) of the teachers disagreed with this suggestion. A value of 46.153 was obtained when the responses were analyzed by the chi square test. This value indicates that there is a significant difference in the responses at the one per cent level.

TABLE LIV

NEED FOR ACOUSTIC TILE ON BARE WALLS

Item Forty: Acoustic tile should be placed on bare walls.

	Teacher Response	Total	
		Number	Per Cent
C A T E A L L G O R I E S	Strongly Agree	21	21.6
	Agree	48	49.4
	Disagree	9	9.3
	Strongly Disagree	0	0.0
	No Opinion	19	19.7
	Total	97	100.0

The results from the ten innovation items indicated that the teachers with experience teaching in open area schools have some definite ideas on improvements that could be made to present and future open area designs that would facilitate increased utilization of audiovisual media, specifically the 16 mm motion picture medium.²

IX. ASSUMPTIONS

Three basic assumptions were made at the outset of the present study. Items forty-two to forty-five were included to check the validity

²See pages 135-136.

of the assumptions.

Item forty-two suggested that the 16 mm motion picture projector is a valuable medium in the respondents' teaching method. Eighty-six (88.6 per cent) of the teachers agreed on this point. Eight (8.3 per cent) disagreed and 3 (3.1 per cent) had no opinion. Table LV summarizes the results for this item.

TABLE LV
ASSUMPTION CHECK I

Item Forty-Two: The 16 mm motion picture projector is a valuable medium in your teaching method.

	Teacher Response	Total	
		Number	Per Cent
C A T E G O R I E S	Strongly Agree	37	38.1
	Agree	49	50.5
	Disagree	6	6.2
	Strongly Disagree	2	2.1
	No Opinion	3	3.1
	Total	97	100.0

Item forty-three suggested that the 16 mm motion picture medium was representative of the majority of the audiovisual media teachers utilized in the open area. Forty-four (45.3 per cent) of the respondents agreed with this point. Table LVI summarizes the results and indicates that 50 (51.5 per cent) disagreed and that 3 (3.1 per cent) had no opinion

relative to this item.³

TABLE LVI

ASSUMPTION CHECK II

Item Forty-Three: The 16 mm motion picture medium is representative of the majority of the audiovisual media you can use in the open area.

	Teacher Response	Total	
		Number	Per Cent
A L L C A T E G O R I E S	Strongly Agree	6	6.2
	Agree	38	39.1
	Disagree	44	45.4
	Strongly Disagree	6	6.2
	No Opinion	3	3.1
	Total	97	100.0

Table LVII summarizes the results from item forty-four. The respondents unanimously agreed that audiovisual media, when utilized correctly, facilitates learning in a school environment.

³When analyzed by the chi square method previously employed (one degree of freedom at the one per cent level - criterion of significance being 6.653), these differences in responding are not significant. The chi square value for Assumption Check II (item forty-three) was 0.191. All other assumption checks indicated that highly significant differences existed in the responses when analyzed by the chi square test.

TABLE LVII

ASSUMPTION CHECK III

Item Forty-Four: Audiovisual media, when utilized correctly, facilitates learning in a school environment.

	Teacher Response	Total	
		Number	Per Cent
A L L O R I E S	Strongly Agree	66	68.0
	Agree	31	32.0
	Disagree	0	0.0
	Strongly Disagree	0	0.0
	No Opinion	0	0.0
	Total	97	100.0

Ninety-four (96.9 per cent) of the teachers agreed with the assumption that it is important that teachers have an opportunity to evaluate the physical facilities in which they teach. One teacher disagreed with this assumption and 2 (2.1 per cent) had no opinion. Table LVIII summarizes the results from item forty-five.

TABLE LVIII

ASSUMPTION CHECK IV

Item Forty-Five: It is important that teachers have an opportunity to evaluate the physical facilities in which they teach.

	Teacher Response	Total	
		Number	Per Cent
C A T A E L G L O R I E S	Strongly Agree	53	54.6
	Agree	41	42.3
	Disagree	1	1.0
	Strongly Disagree	0	0.0
	No Opinion	2	2.1
	Total	97	100.0

X. SUMMARY

The data representing the opinions of the teachers to the survey instrument have been summarized in this chapter. Ninety-seven (71.8 per cent) of the 135 surveys distributed were returned. Thirty-six (37.1 per cent) of the respondents taught in rectangular original designs; 21 (21.6 per cent) taught in circular original designs; 25 (25.8 per cent) taught in rectangular addition designs and 15 (15.5 per cent) of the respondents taught in circular addition designs.

Considering the total responses for the twenty-six items that referred to the existing conditions in the schools studied, 56.0 per cent agreement with the items was expressed by teachers in circular original designs. This design category recorded the highest percentage of agreement with the items. Teachers in addition designs expressed 50.3

per cent disagreement with the items. The addition design category reported the highest percentage of disagreement with the twenty-six statements referring to the existing conditions relative to the selected factors of design. The opinions of the teachers do not indicate an appreciable difference in the adequacy of the selected design factors. They tend to support the conclusions that circular original schools have the most adequate facilities and that addition designs have the least adequate facilities, relative to the selected factors of open area design, for 16 mm motion picture presentation.

Lighting Controls The data from the thirteen items referring to lighting controls indicated that teachers in circular original schools expressed the highest percentage of agreement (59.2 per cent) with the adequacy of the lighting controls in their teaching station for 16 mm motion picture presentation. Teachers in rectangular addition schools recorded the highest percentage of disagreement (43.4 per cent) with the adequacy of the lighting controls for this purpose.

Acoustical Controls Data tabulated from the eleven statements referring to the adequacy of the acoustical controls in the teaching stations, indicated that 53.9 per cent of the teachers in circular original designs were of the opinion that acoustical controls in their teaching stations were adequate for 16 mm motion picture presentation. Respondents in rectangular addition designs and circular addition designs disagreed, by 65.0 per cent and 64.8 per cent respectively, regarding the adequacy of the acoustical controls in their teaching stations.

Electrical Outlets Two statements of the survey instrument referred to the number and location of electrical outlets in the teaching station. Two thirds (66.7 per cent) of the circular original design teachers were of the opinion that the number and location of the electrical outlets was adequate. Teachers teaching in rectangular original schools recorded the highest percentage of disagreement, 52.2 per cent, with the adequacy of the number and location of the electrical outlets in their teaching station.

Teacher Information The twenty-six items relating to the adequacy of the selected open area design factors for 16 mm motion picture presentation were analyzed by the teacher information obtained by Part II of the survey instrument. Teacher information included years of teacher training, total teaching experience, total teaching experience in open area schools, total teaching experience in the present school, completion of audiovisual communications courses, present enrolment in an audiovisual communications course, average number of times per week respondents used the 16 mm motion picture medium and teacher age. The data from the twenty-six items were analyzed by teacher information to determine if any trends in responding could be attributed to one or more of the factors included in Part II of the instrument. No trends in responding can be attributed to the factors included in Part II of the survey.

Evaluation Three items referred to the teachers' evaluation of all the selected factors of open area design for 16 mm motion picture presentation. The results indicated that teachers could project a 16 mm motion picture at their teaching station, to fulfil an educational objective, if an alternate facility, which had better control of lighting

and sound, was not available.

Organization Two items referred to the organization of the timetable relative to the separation or combination of adjacent classes during 16 mm motion picture presentation. Considering the results from both items the timetables in the schools are organized to provide for the combination of adjacent classes.

Innovation Changes in open area design which would allow greater utilization of the 16 mm motion picture medium were suggested in ten items. The respondents expressed significantly high agreement to six of the suggestions. These were:

1. Opaque, floor to ceiling, fireproof and sound absorbing curtains should be installed between teaching station (80.4 per cent agreement; chi square value 58.597; chi square criterion 6.635).
2. Some type of listening center device should be installed in open areas to allow students to monitor the sound track of a 16 mm motion picture (85.5 per cent agreement, chi square value 57.301; chi square criterion 6.635).
3. Acoustic tile should be placed on bare walls (70.0 per cent agreement; chi square value 46.153; chi square criterion 6.635).
4. Rheostat controls on the electric lights are necessary to provide students with sufficient indirect light for note taking during a 16 mm motion picture (77.3 per cent; chi square value 40.000; chi square criterion 6.635).

5. A projection room, where lighting and sound can be completely controlled, is necessary (76.2 per cent agreement, chi square value 26.500; chi square criterion 6.635).
6. More flexibility should be built into the electric light switch controls (67.0 per cent agreement; chi square value 18.889; chi square criterion 6.635).

Assumptions Four items which tended to reiterate the basic assumptions of the study were included as checks to these basic assumptions. Of the four assumptions, three received a high agreement response. One assumption was disagreed with by 51.5 per cent of the respondents. This assumption stated that the 16 mm motion picture medium is representative of the majority of the audiovisual media teachers in the open area use. Two explanations for these results can be offered. Teachers may use other forms of media, e.g., overhead projectors, filmstrip projectors, tape recorders and listening centers, more frequently than they would use the 16 mm motion picture medium. This is possible for two reasons. Other forms of media may suit the educational objectives the teachers have established. In addition, the lighting and acoustical conditions in the open area may prevent the teacher from using the 16 mm motion picture medium in the open areas as often as he or she would like.

The second explanation relates to the wording of the item. Re-wording the item to state that 16 mm motion picture medium is representative of the audiovisual media teachers use in the open area because it has a projected image which requires lighting control and an audible sound track which requires control of acoustics may yield

different results.

CHAPTER VII

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Chapter VII summarizes the main procedures used in the present study. The questions, posed in Chapter I, will be answered on the basis of the findings. The problems identified by the findings, which relate to the utilization of the 16 mm motion picture medium will be summarized. Recommendations for changes in future open area schools, which the teachers included in the study agree will facilitate greater audiovisual utilization, will be proposed.

I. PROCEDURES SUMMARIZED

The purpose of the study was to identify problems resulting from lighting and acoustical control facilities in open area elementary schools, which would have consequences for 16 mm motion picture presentations. In addition, recommendations, based upon the interpretation of data from an opinion survey, which might be incorporated into present and future open area designs were to be proposed.

The population included the 135 certified teachers teaching in the open areas of open area elementary schools built by the Edmonton Public School Board between 1966 and 1968. The selected schools for the main study were grouped into the following design categories: rectangular original (five schools), circular original (four schools), rectangular additions (four schools) and circular additions (two schools).

Personal visitations to each school to determine the existing

conditions of the selected factors of open area school design (lighting controls, acoustical controls, electrical outlets) were completed. A survey instrument was developed and distributed to the population. It was designed to ascertain the teachers' evaluation of the selected factors of design which may have consequences for 16 mm motion picture presentation. The 16 mm motion picture medium was selected as being representative of the media teachers may use in the open area in that it has a projected image, requiring lighting control and an audible sound track, requiring acoustical control.

A pilot study was conducted in January, 1970. Teachers in two rectangular original schools, having pupil enrolments below the designed capacity of the school, served the purposes of the pilot. The results of the pilot study indicated that respondents were interpreting survey items satisfactorily and that the reliability of the responses was high. The findings of the pilot study were used to make the final revisions to the survey instrument and to data collection and compilation procedures.

The survey instruments were distributed to the fifteen schools included in the main study on February 4, 1970. The surveys were called for, by messenger, on February 13, 1970. Ninety-seven (71.8 per cent) of surveys distributed were completed and returned.

The instrument contained two parts. Part I contained forty-five items. Thirteen items referred to lighting controls and was composed of statements referring to natural lighting controls, artificial lighting controls, including electrical light switch placement and identification. Eleven items asked the teachers to evaluate the acoustical controls. Two items related to the number and location of

electrical outlets. The remaining items referred to an overall evaluation of the lighting and acoustical controls (four items), timetabling organization (two items), possible design changes for open area schools (two items), and assumption checks (four items).

Part II of the survey instrument provided teacher information relative to total years of teacher training, total years of teaching experience, total years of teaching experience in open area schools, total years of teaching experience in the present school, completion of an audiovisual communications course, present enrolment in an audiovisual communications course, the average number of times per week teachers used the 16 mm motion picture projector, and the age of the respondents. The twenty-six items referring to the teacher evaluation of the existing conditions of the selected design factors were analyzed by the factors of teacher information to ascertain if any trends in evaluating could be detected and attributed to one or more teacher information factors.

II. CONCLUSIONS

Of the 135 opinion surveys distributed 97 (71.8 per cent) were completed and returned. Interpretation of the findings from the personal visitations and of the survey results led to the following conclusions.

1. The teachers teaching in the open area of open area elementary schools, taken as a group, are divided on the point of the adequacy of the selected factors of design relative to 16 mm motion picture presentations. Adequacy of the selected factors of design was expressed by 44.2

per cent of the respondents. Inadequacy of the factors of design was reported by 45.9 per cent of the respondents.

2. Teachers teaching in circular original open area designs reported 56.0 per cent adequacy of the selected factors of design. This group expressed the highest percentage of agreement with the adequacy of their open area designs. Teachers in addition designs evaluate their designs as being most inadequate for 16 mm motion picture presentation. This group expressed 50.3 per cent agreement with the inadequacy of the selected factors of design.

The results did not indicate an appreciable difference in the adequacy of the selected factors of design between each design category. There was no apparent indication that the selected factors of design are completely inadequate for the teachers purposes. The results lend support to the conclusion that circular original designs have the most adequate lighting and acoustical control facilities for 16 mm motion picture presentation. Further, they indicated that addition designs have the least adequate lighting and acoustical control for 16 mm motion picture presentation.

3. Controls for natural and artificial lighting tend to be less than adequate for 16 mm motion picture presentation. A majority of the respondents (50.5 per cent) reported agreement with the adequacy of lighting controls. However, 38.2 per cent expressed disagreement with these items. Although a majority expressed satisfaction, a large minority (over 25.0 per cent) expressed dissatisfaction.

Respondents in circular original designs expressed the highest percentage of agreement (59.2 per cent) with the adequacy of lighting controls. Teachers in rectangular addition designs expressed the highest percentage of disagreement (43.4 per cent) with the adequacy of lighting controls.

The information from the personal visitations indicates that artificial lighting lacks flexible control. Teachers in some teaching stations of the open areas have great distances between them and the nearest electrical light switch panel. Natural lighting controls exist on all windows in the circular original open areas. The absence of similar lighting controls on all windows of some rectangular addition schools was noted.

4. Controls for sound tend to be less than desirable for 16 mm motion picture presentation in the open area. A majority of the respondents (55.2 per cent) expressed dissatisfaction with the acoustical controls. Satisfaction with these controls for 16 mm motion picture presentation was reported by 35.7 per cent of the teachers. Respondents in circular original designs recorded the highest percentage (53.9 per cent) of satisfaction; teachers in rectangular additions and circular additions were most dissatisfied with the acoustical controls (65.0 per cent and 64.8 per cent disagreement respectively).

Acoustical controls vary among the schools studied. Some addition designs have unique problems (e.g., a crawl space between the

foundation and floor at Forest Heights Elementary School) for which no unique acoustical controls have been included. Acoustic ceiling tile has been used in all the circular original designs. This practice has not been consistently followed in either rectangular original or addition designs.

5. Teachers are divided on the appropriateness of the number and location of the electrical outlets in the open areas. Considering all the responses, 55.3 per cent of the teachers were satisfied with the number and location of the electrical outlets; 43.7 per cent expressed dissatisfaction on this point. A majority of the respondents (66.7 per cent) in circular original designs indicated their satisfaction with the number and location of the electrical outlets. Of the teachers in rectangular original schools a majority 52.2 per cent expressed dissatisfaction with the number and location of the electrical outlets.
6. The teachers' total evaluation of the lighting and acoustical controls indicated that they would use their teaching stations to project a 16 mm motion picture film, when it is educationally justified, provided an alternative facility, which afforded more effective lighting and acoustical control, was not available.
7. Timetables for the open area classes are planned to facilitate the combination, rather than the separation, of adjacent classes for the purposes of viewing of a 16 mm motion picture.

8. No appreciable trends in responding existed relative to the factors of teacher information (total years of teacher training, total teaching experience, total teaching experience in open area schools, total teaching experience in the present school, completion of an audiovisual communications course, present enrolment in an audiovisual communications course, the average number of times per week the respondents used the 16 mm motion picture medium, and the age of the respondents).

III. PROBLEMS IDENTIFIED

Open area schools, which have been designed to facilitate flexible grouping of students, easy access to resource material and a teaching philosophy and methodology which combines the talents of teachers for specific educational purposes, impose limitations on the use of audiovisual media. Teachers in open area elementary schools of the Edmonton Public School Board agree that audiovisual media, when utilized correctly facilitates learning. The investigator is of the opinion that at least three pre-requisites must exist:

1. Teachers must be trained in the use of media
2. Equipment and materials must be available to the teacher
3. The physical facilities of the open area must be designed to accommodate the use of audiovisual media.

The removal of walls between teaching stations has created problems of lighting and acoustical control. The findings of the present study indicated that several teachers teaching in the open area

are dissatisfied with the existing conditions relative to lighting and acoustic controls. Teachers in circular schools report most satisfaction with the existing conditions. However, their percentage of agreement with the adequacy of the design factors, 56.0 percent, is not a large majority. Nearly one half of the teachers in such open areas are dissatisfied. A majority of teachers in both the rectangular original schools and in the open area additions expressed dissatisfaction with the lighting and acoustical controls.

Findings from the survey indicated that the greatest problems existed in the control of sound emanating from the sound track of a 16 mm motion picture. Acoustical problems were most acute in addition schools. According to the results obtained, these schools have the greatest difficulty in controlling light when compared with rectangular original and circular original schools.

Findings from the personal visitations revealed inconsistencies in the provision for acoustical and natural lighting control. Some designs (e.g., circular original schools) contain acoustic ceiling tile throughout the open area. Other designs have ceilings partially covered with acoustic ceiling tile. Rectangular original schools and addition schools have several window areas for which no natural lighting control facilities exist. Circular original schools have blackout curtains on every window in the open area.

The problems of lighting and acoustical control in open areas create complications for the use of audiovisual media which have either a projected image requiring lighting control, (filmstrips, 2 x 2 slides,

8mm film loops) or an audible sound track, requiring acoustical control, (tape recordings, disc recordings) or both, (16 mm motion pictures, sound filmstrips, slide-tape presentations and television). Teachers will tend to use less media in their instruction at their teaching stations because of the difficulties involved in controlling lighting and acoustics. Considering the increased availability and quality of audiovisual materials, teachers may tend to use media in undesirable situations. Such situations may interfere with instruction in adjacent teaching stations, and will detract from the effectiveness media might have in enriching the learners' educational experiences. The inadequate lighting and acoustical control conditions will force teachers to adapt their instructional strategies to the physical environment of the school. This situation negates the philosophy of building the school to fit the program.

From an educational standpoint and an audiovisual standpoint these situations are less than desirable. From the teachers' standpoint, the physical facilities for audiovisual utilization are inadequate. The findings stress the need for modifications to existing open areas and innovations in future open area designs.

IV. RECOMMENDATIONS BASED UPON THE FINDINGS, FOR OPEN AREA DESIGN MODIFICATIONS AND CHANGES

Ten items of the survey instrument referred to possible modifications or changes in open area design. The suggestions may allow for greater audiovisual media utilization which requires lighting acoustical control. On the basis of the results received, teachers teaching in the open area elementary schools expressed high agreement

to six of the proposals. It is recommended that these suggestions be incorporated into existing and future open area designs.

1. Opaque, floor to ceiling, fireproof and sound absorbing curtains should be installed between teaching stations. These curtains could be drawn during a media presentation to facilitate increased lighting and acoustical control for all teachers and students in the open area.
2. A listening center device, preferably a wire loop installed around the perimeter of the open area, should be incorporated into all open area designs to allow students to monitor a sound track which might be distracting if it were audible. Only students wearing appropriate wireless headsets would hear the amplified sound.
3. Acoustic tile is needed on all bare walls.
4. Rheostat controls, which increase or decrease the illumination emanating from the electrical lights, are necessary to provide flexible control of lighting for student note taking in the darkened teaching station.
5. A projection room, where lighting and acoustics can be completely controlled, is necessary in open area schools where the lighting and acoustical controls are inadequate for media use. Future open area school designs must concentrate on modifying the teaching station design to facilitate better audiovisual media utilization.
6. Increased flexibility in the electric light switch controls is required.

Several areas are suggested as appropriate for further study. In those schools where the recommendations of the present study will have been incorporated, the effectiveness of these design modifications should be evaluated. Findings from a cost effectiveness or cost comparison study, centering on lighting and acoustical controls would be useful. Such a study could profitably be compared with teacher opinions on these controls. Replication of the present study, which might incorporate teacher interview into the design is suggested. Future research in the schools included in the present study should be delimited to the rectangular original category or the addition categories, for within each of these, several unique designs exist. In depth analysis of design problems relating to lighting and acoustical control within these categories would reveal interesting information which was beyond the scope of the present study.

V. SUMMARY

School designs reflect modern educational philosophies. Educators are realizing the contribution technology can make to education. Increased utilization of this resource depends upon teacher preparation and the physical facilities of the school to permit audiovisual media utilization. This study has been concerned with the latter requirement. The findings indicated that existing facilities in open area elementary schools partially fulfill the necessary lighting and acoustical controls deemed necessary by the teachers for audiovisual media use involving a projected image or audible sound track. Adoption of the recommendations proposed may serve to increase the adequacy of open area physical facilities, permitting greater audiovisual media utilization.

B I B L I O G R A P H Y

BIBLIOGRAPHY

A. BOOKS

- Brown, J., R. Lewis, and F. Harcelroad, Audiovisual Instruction: Materials and Methods, (2nd edition) New York: McGraw Hill Book Company, 1964.
- Brown, J., and K. Norberg, Administrating Educational Media, New York: McGraw Hill Book Company, 1965.
- Canadian School Library Association, Standards for Library Service for Canadian Schools, Toronto: The Ryerson Press, 1967.
- Erickson, C., Fundamentals of Teaching with Audiovisual Technology, New York: The Macmillan Company, 1965.
- Good, C., Introduction to Educational Research, New York: Appleton-Century Crofts, 1963.
- Hall, E., and L. Dennis, Living and Learning: The Report of The Provincial Committee on Aims and Objectives in the Schools of Ontario, Toronto: Newton Publishing Company, 1968.
- Kerlinger, F., Foundations of Behavioral Research, New York: Holt Rinehart and Winston, 1964.
- McClurkin, W., School Building Planning, New York: The Macmillan Company, 1964.
- McCollough, C., and L. Van Atta, Statistical Concepts: A Program for Self Instruction, New York: McGraw Hill Book Company, 1963.
- Millar, J., Media Canada: Guidelines for Educators, Toronto: Pergamon of Canada Ltd., 1969.
- Oppenheim, A. N., Questionnaire Design and Attitude Measurement, New York: Basic Books, Inc., 1966.
- Phenix, P., Philosophy of Education, New York: Holt, Rinehart and Winston, 1958 (pp. 57-75).
- Trow, W., Teacher and Technology - New Designs for Learning, New York: Appleton-Century Crofts, 1963.
- Trump, J., and D. Baynham, Focus on Change: Guide to Better Schools, Chicago, Rand McNally and Company, 1961.

B. PUBLICATIONS BY GOVERNMENTS, LEARNED SOCIETIES
AND OTHER ORGANIZATIONS

- DeBernadis, A., V. Doherty, E. Hummel, and C. Brubaker, Planning Schools for New Media, U. S. Department of Health, Education, and Welfare, Office of Education, 1961.
- Couglin, G., and R. Hause, (ed.) Total Energy, New York: Educational Facilities Laboratories, Inc., 1967.
- Eaton, L., and R. Lytle, New Schools for New Education: A Report from Ann Arbour, New York: Educational Facilities Laboratories, Inc., 1960.
- Ellsworth, R. E., and H. Wagener, (ed.) The School Library, New York: Educational Facilities Laboratories, Inc., 1963.
- Evans, C., Profiles of Significant Schools: Schools for Team Teaching, New York: Educational Facilities Laboratories, Inc., 1961.
- Farmer, M., and R. Weinstock, Profiles of Significant Schools: Schools Without Walls, New York: Educational Facilities Laboratories, Inc., 1965.
- Fitzroy, D., and J. L. Reid, Acoustical Environment of School Buildings, New York: Educational Facilities Laboratories, Incorporated, 1963.
- Green, A., (ed.) Educational Facilities with New Media, Washington, D. C.: Department of Audiovisual Instruction, National Education Association in collaboration with the Center for Architectural Research, Rensselaer Polytechnic Institute, 1966.
- Gross, R., and J. Murphy, Educational Change and Architectural Consequences, New York: Educational Facilities Laboratories, Inc., 1968.
- Murphy, J., Profiles of Significant Schools: Middle Schools, New York: Educational Facilities Laboratories, Inc., 1965.
- Ontario Curriculum Institute Committee on Instructional Aids and Techniques, Technology in Learning, Ontario Curriculum Institute, 1965.
- _____, The Effect of Windowless Classrooms on Elementary School Children, Architectural Research Laboratory, Department of Architecture, University of Michigan, 1965.
- _____, Environmental Engineering for the School: A Manual of Recommended Practice, United States Office of Health, Education and Welfare, Washington, D.C., 1961.

C. PERIODICALS

- Berlo, D., "You are in the People Business," Audiovisual Instruction, Volume 8, Number 6, June, 1963.
- Dillard, P. H., "No Windows Please ... And Put it Underground," Audiovisual Instruction, Volume 7, Number 2, October, 1962.
- Guerin, D. V., "Implications of the Communications Process for School Design," Audiovisual Instruction, Volume 12, Number 8, October, 1967.
- Herman, A. L., "Reflections on the Ugly Classroom," Journal of Higher Education, Volume 39, Number 7, October, 1968.
- Pearce, L. "Environmental Structure: A Third Partner in Education," Educational Technology, Volume 8, Number 7, September, 1968.
- Shaver, J. A., "Build the School to Fit the Program," Audiovisual Instruction, Volume 7, Number 2, October, 1962.
- Szabo, W., "Planning Audiovisual Facilities," in Audiovisual Communications, Volume 4, Number 1, February, 1970.
- _____, "Designing Schools for Today's Children," Educational Media, Volume 1, Number 3, July-August, 1969.
- _____, "Planning Requirements of the Classroom: Minimum Standards for Michigan," in Michigan Educational Journal, Volume 41, Number 9, December, 1963.
- _____, "Prefab School Could Cut Construction Time," School Progress, Volume 35, Number 9, September, 1966.

D. UNPUBLISHED MATERIALS

- Buglas, F., "Status of Audiovisual Programs in Saskatchewan High Schools in 1968 - 1969," Unpublished Masters Thesis, University of Alberta, Edmonton, Alberta, 1969.
- Chritsen, F., "Study of Climate Control in Pinellas County, Florida," School Building Research: A Report of a Program Held as Part of the Building Research Institute, 1962 Fall Conferences, Washington, D.C.

- Edmonton Public School Board, "Guides to Project Architect: Current Building Program-Elementary Schools," Edmonton, Alberta.
- Harriman, A., "Definition of School Facilities, Needs and Utilization," School Building Research: A Report of a Program Held as Part of the Building Research Institute, 1962 Fall Conferences, Washington, D.C.
- Heldman, Lawrence J., "Planning Elementary School Science Facilities," Unpublished Doctoral Dissertation, Columbia University, 1966.
- Shaver and Company, "The Learning Environment," Salina, Kansas, 1968.
- Tranter, R., "An Analysis of Team Teaching as Compared to Traditional Schools in the Edmonton Public School System," Unpublished Masters Thesis, University of Oregon, Eugene, Oregon, 1969.

A P P E N D I C E S

A P P E N D I X A

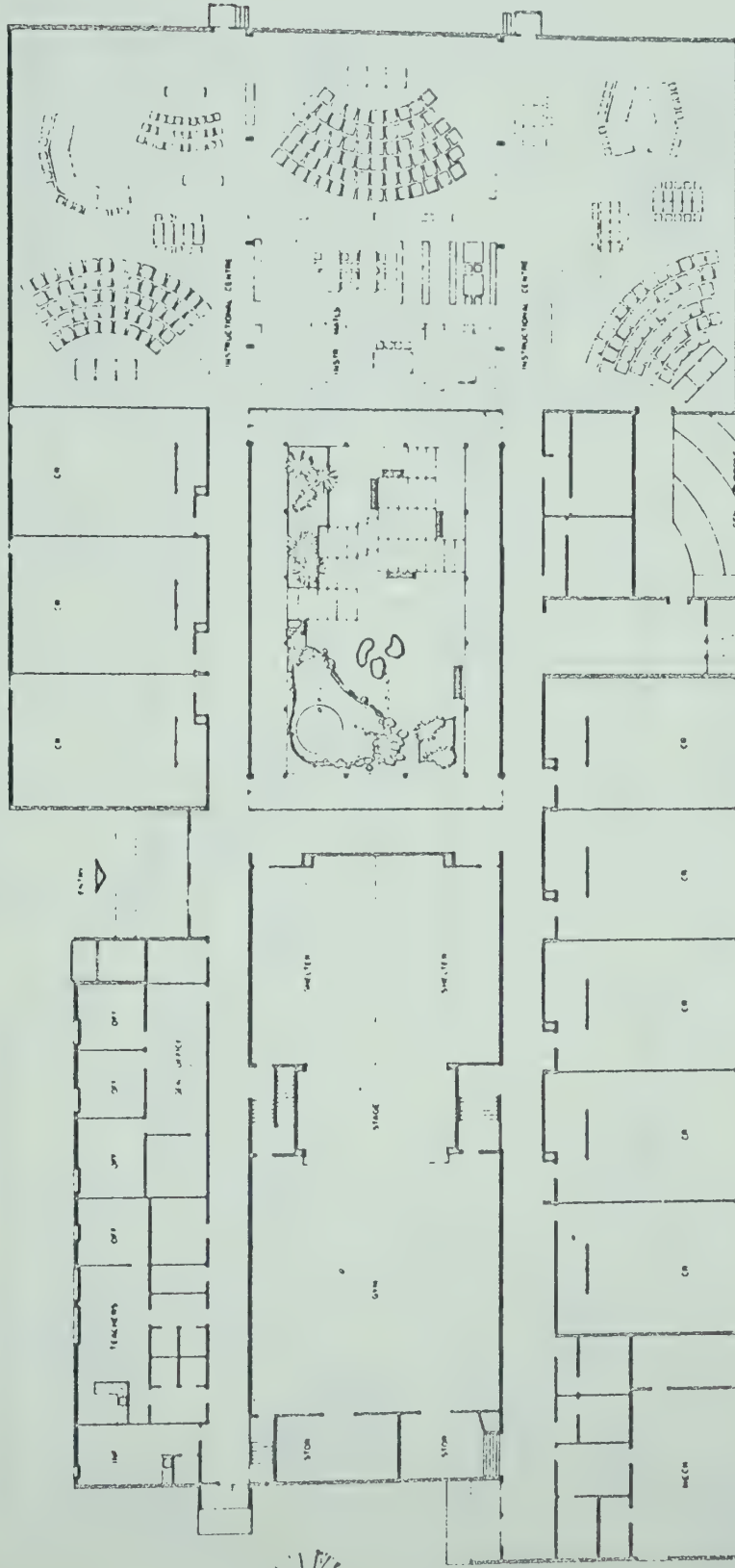
OPEN AREA SCHOOL DESIGNS

A P P E N D I X A : P A R T I

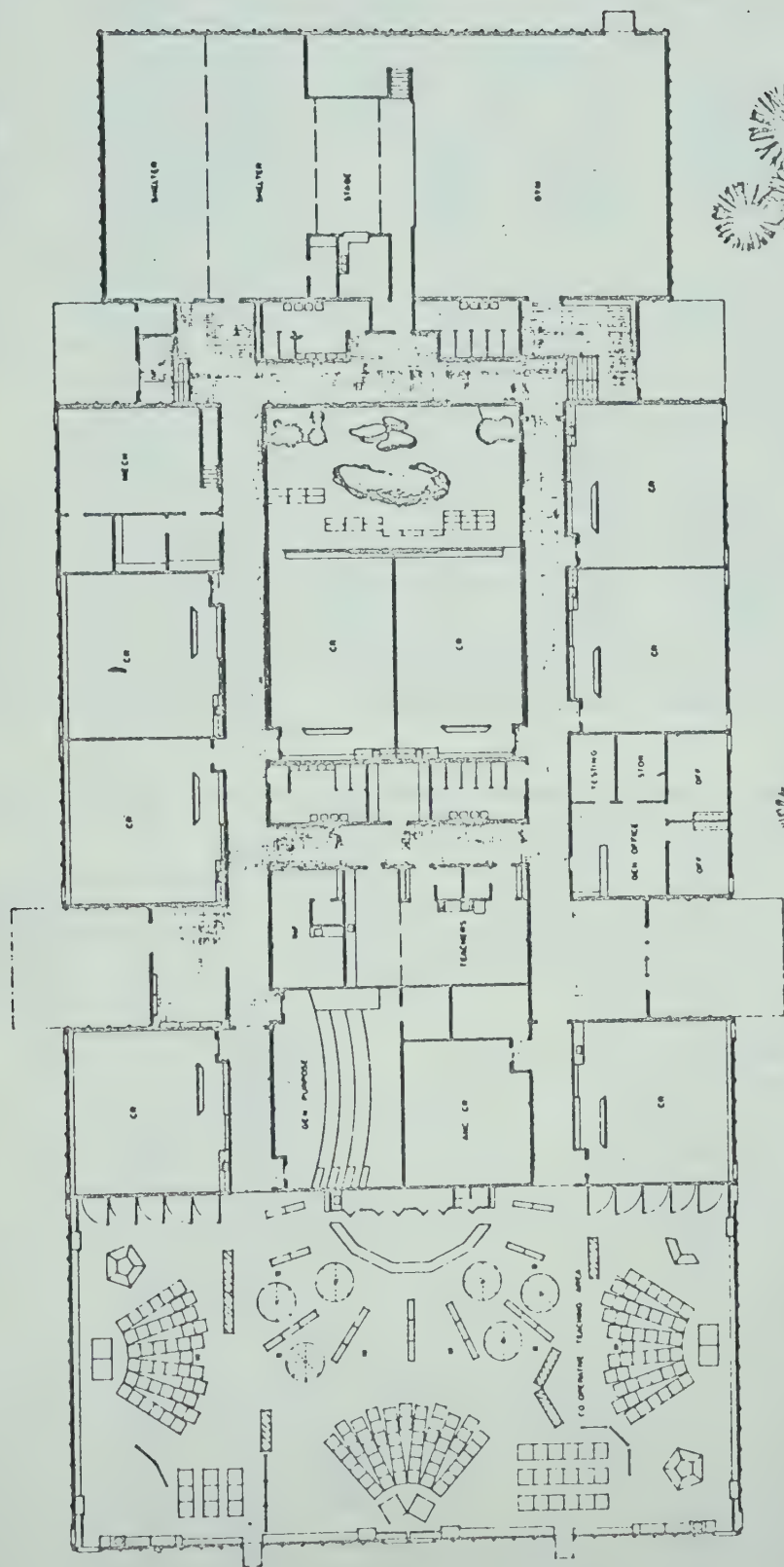
RECTANGULAR ORIGINAL DESIGNS

(DELWOOD, WESTBROOK)
(YORK)
(RICHARD SECORD)
(GREENFIELD)

SOUTH ELEVATION

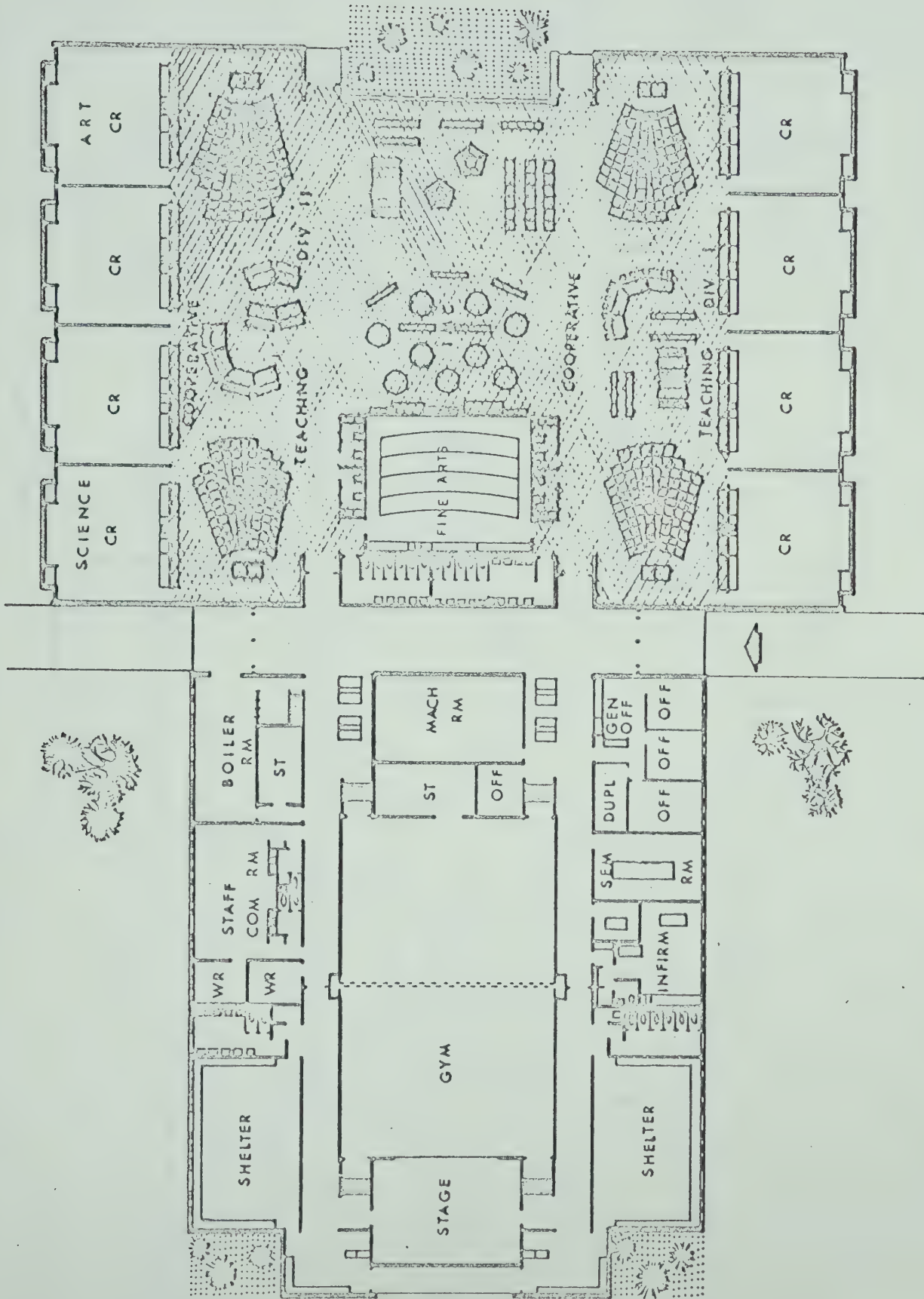


DELWOOD: WESTBROOK ELEMENTARY
EDMONTON PUBLIC SCHOOL BOARD



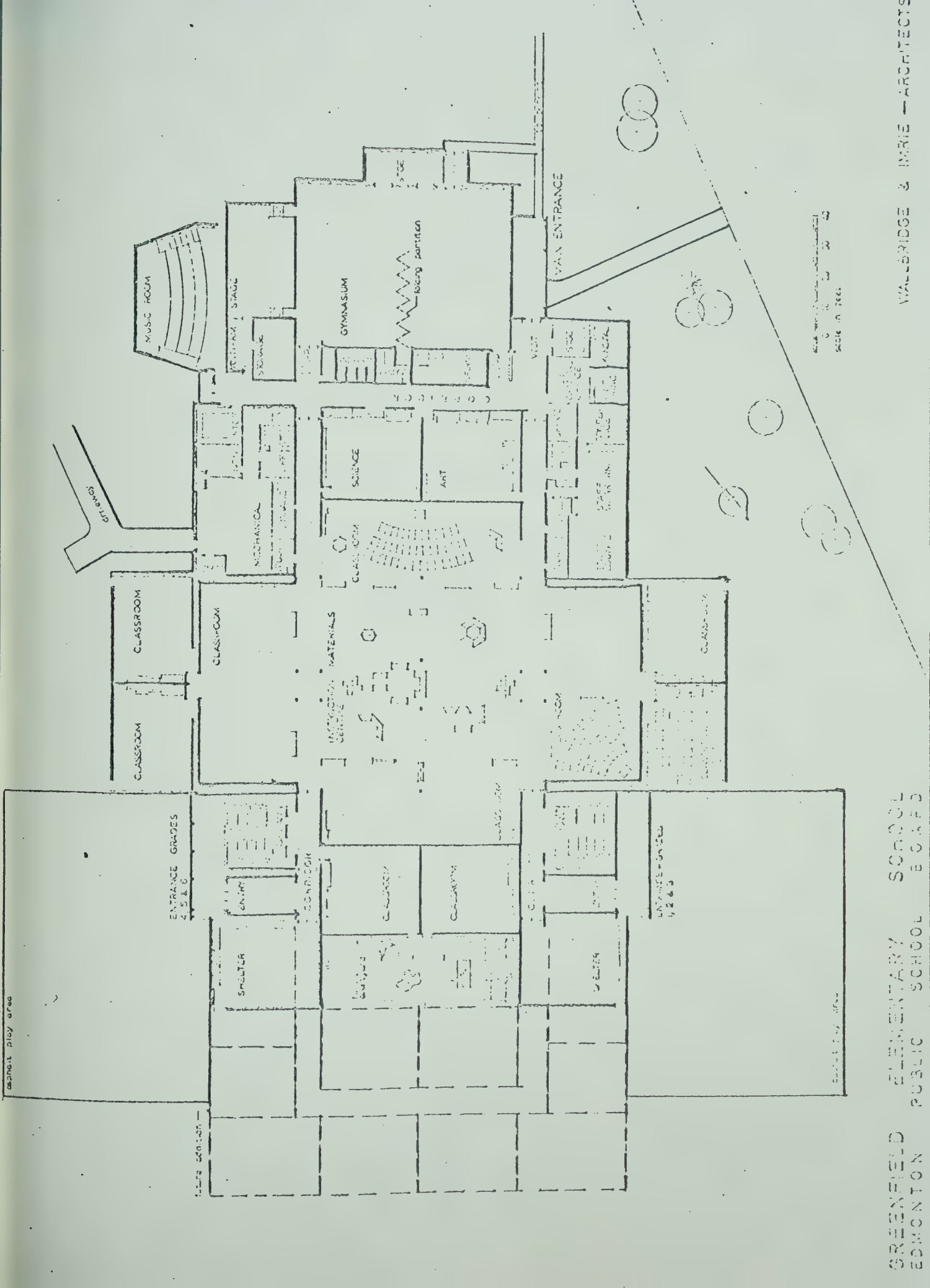
YORK ELEMENTARY
EDMONTON PUBLIC SCHOOL BOARD





RICHARD SECOND ELEMENTARY

school play area



GREENFIELD ELEMENTARY SCHOOL
EDMONTON PUBLIC SCHOOL BOARD

WALLBRIDGE & INRIE — ARCHITECTS

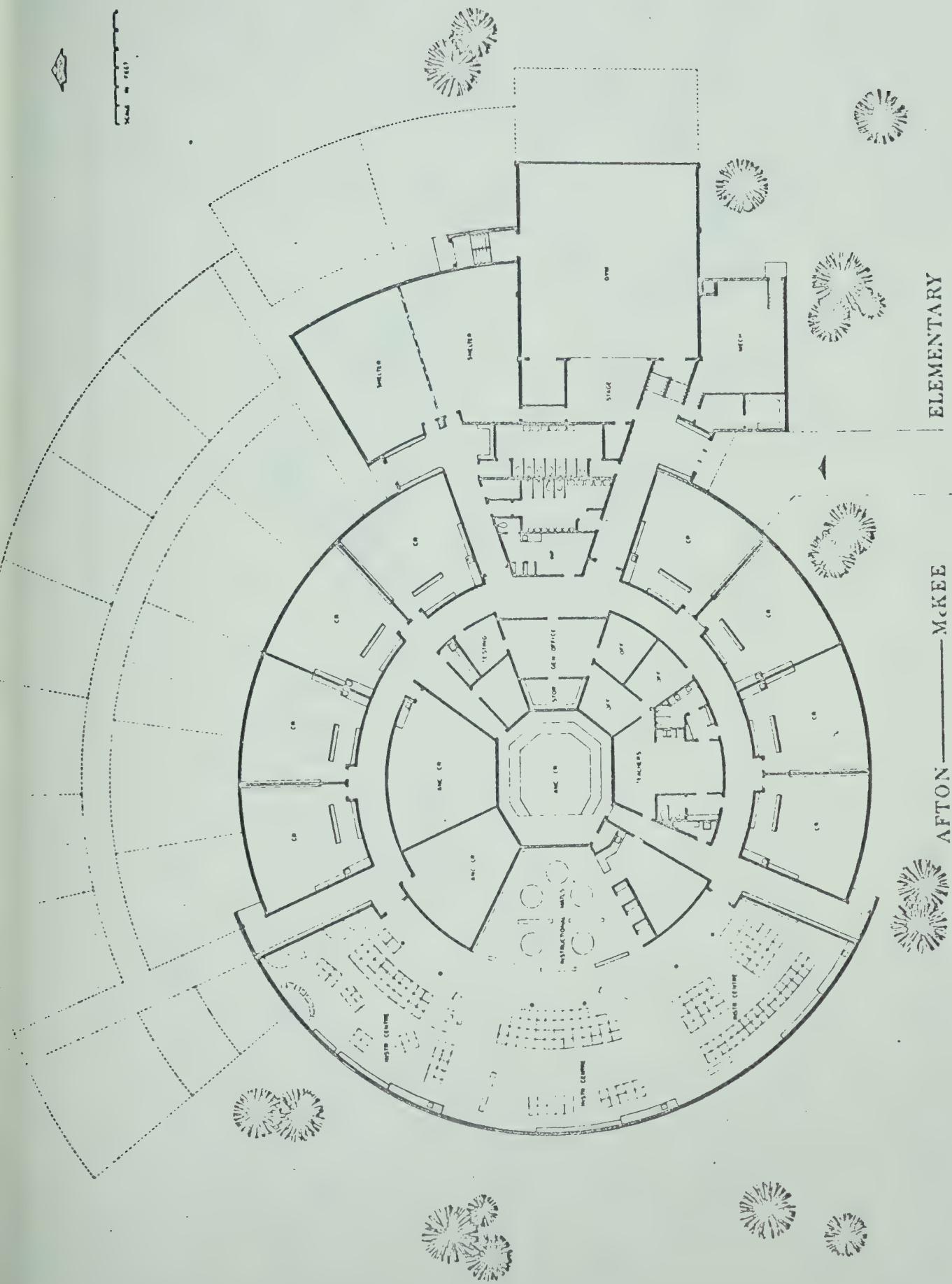
A P P E N D I X A: P A R T II

CIRCULAR ORIGINAL DESIGNS

(AFTON, MCKEE, BRIGHTVIEW)
(KILDARE)



Scale in Feet



ELEMENTARY

BOARD

SCHOOL

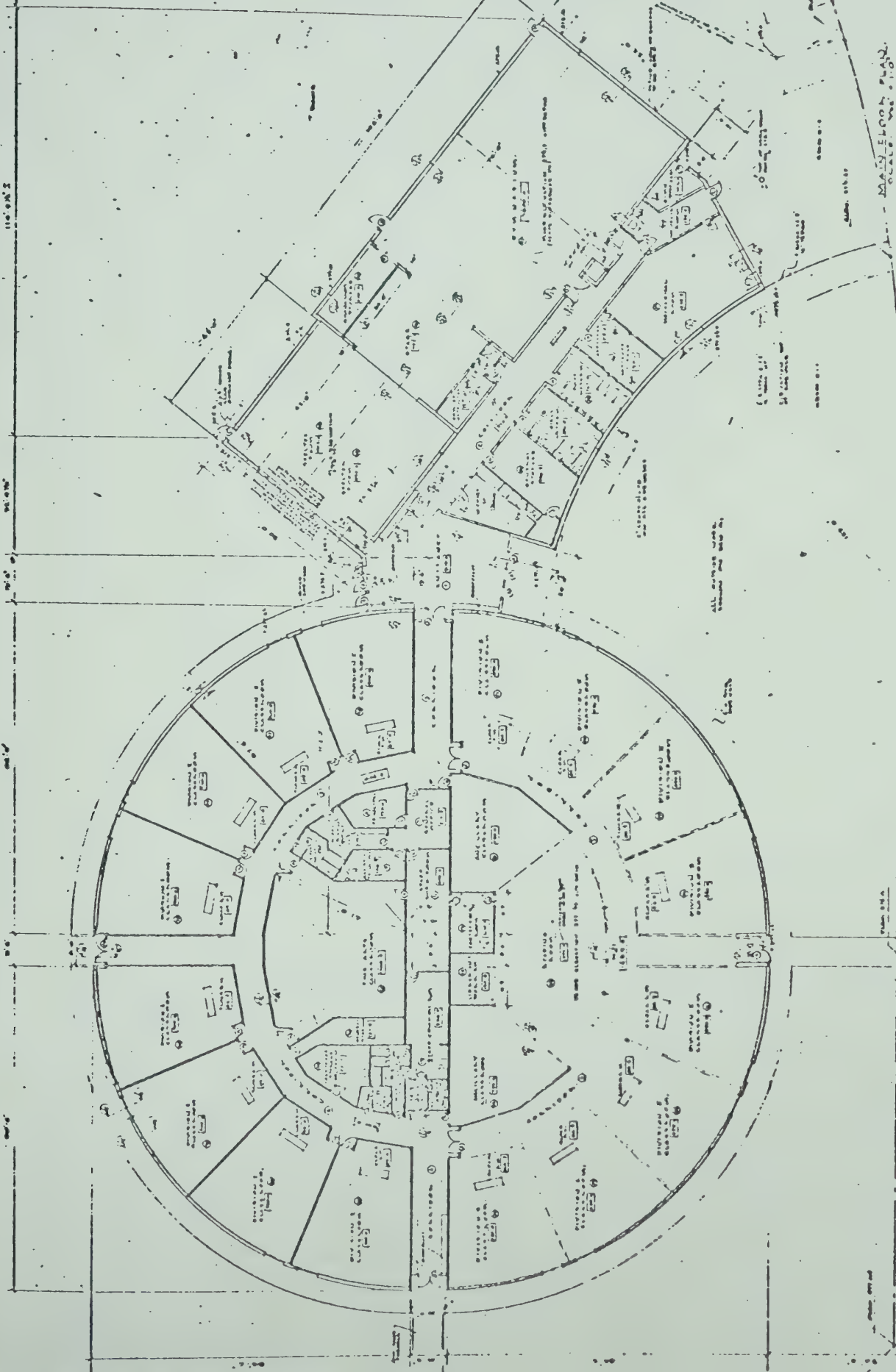
AFTON — MCKEE

PUBLIC

EDMONTON



MAIN FLOOR PLAN
SCALE 1/8" = 1'-0"



A P P E N D I X A: P A R T I I I

RECTANGULAR ADDITION DESIGNS¹

(FOREST HEIGHTS)
(WAVERLEY)

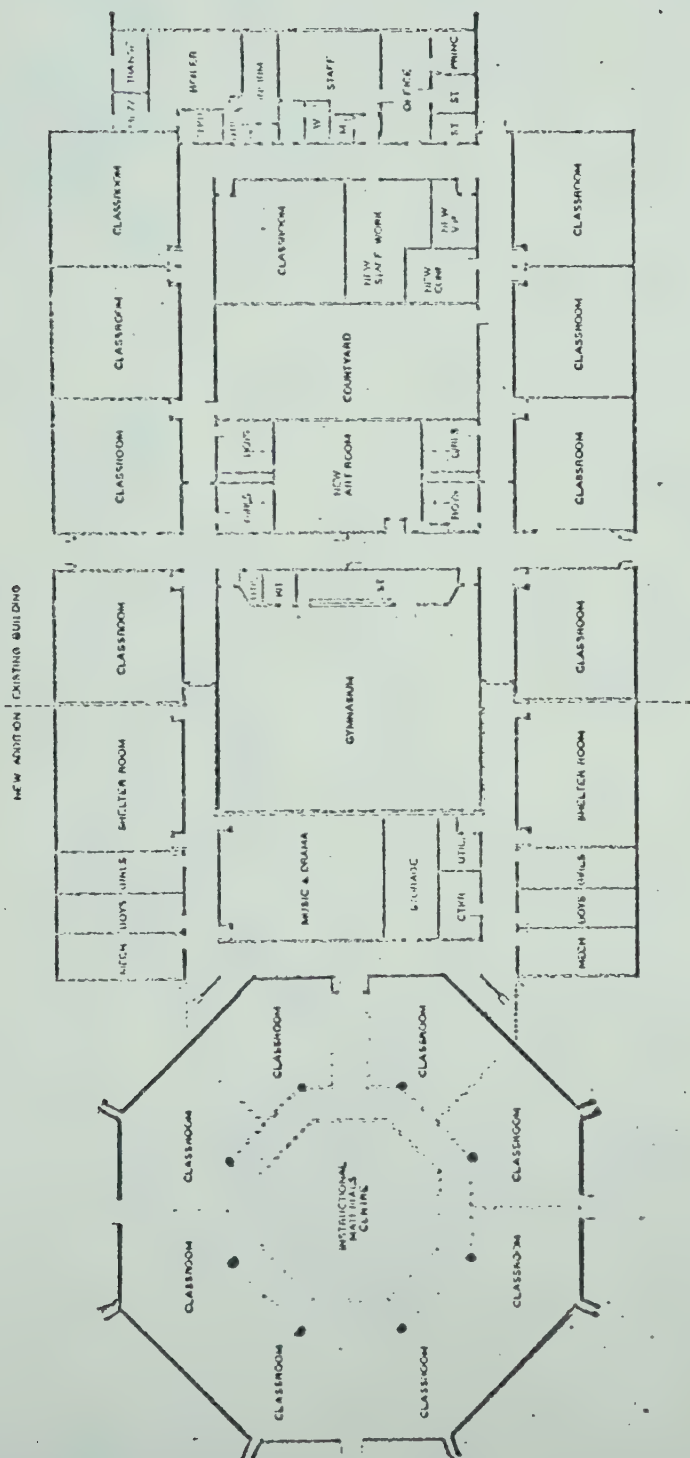
¹Plans of the Mee-Yah-Noh and Rio Terrace designs were not available.

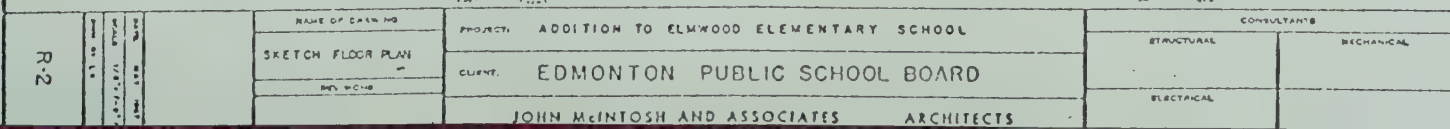
A P P E N D I X A : P A R T I V

CIRCULAR ADDITION DESIGNS

(PRINCETON)

(ELMWOOD)





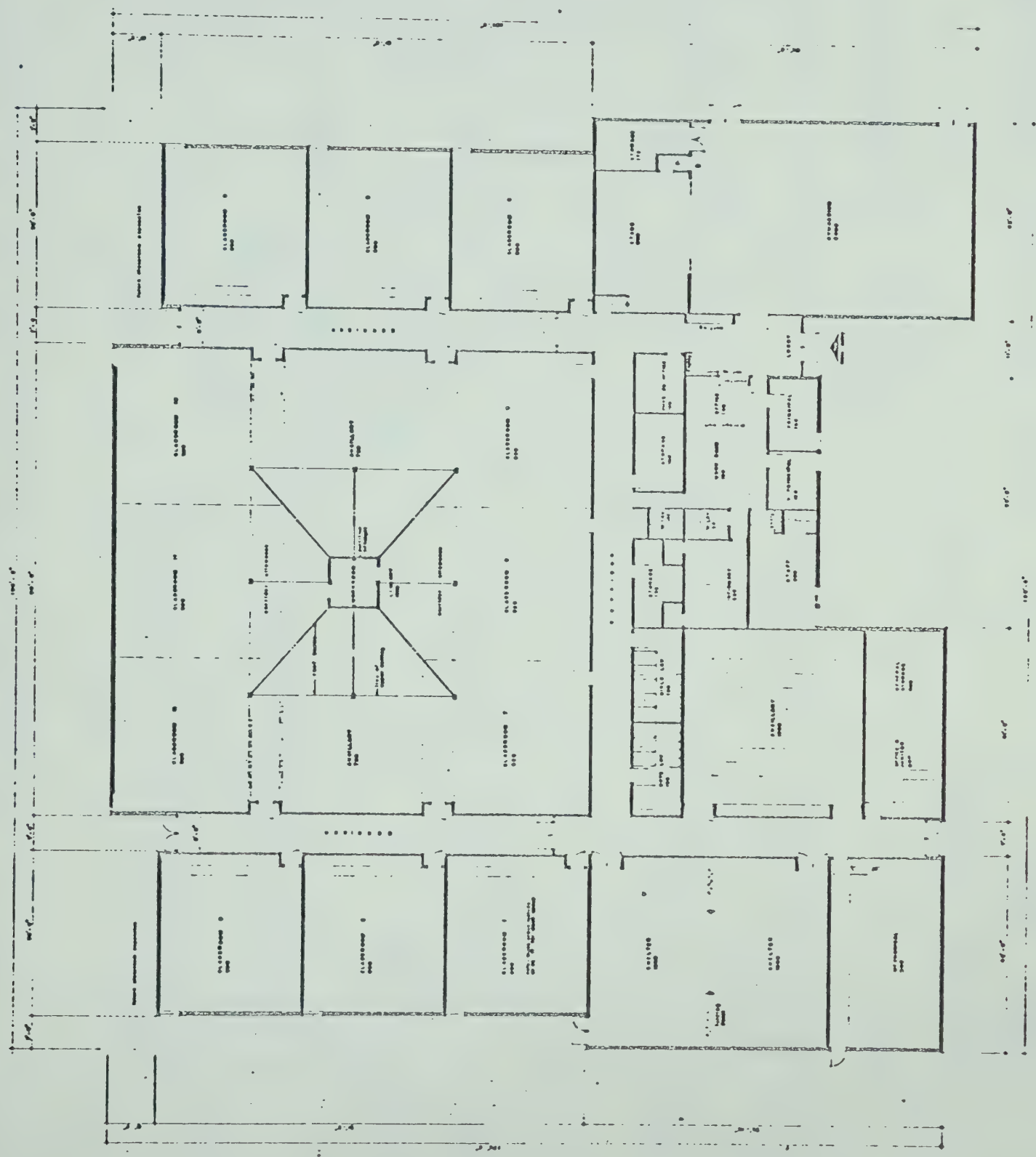
A P P E N D I X A: P A R T V

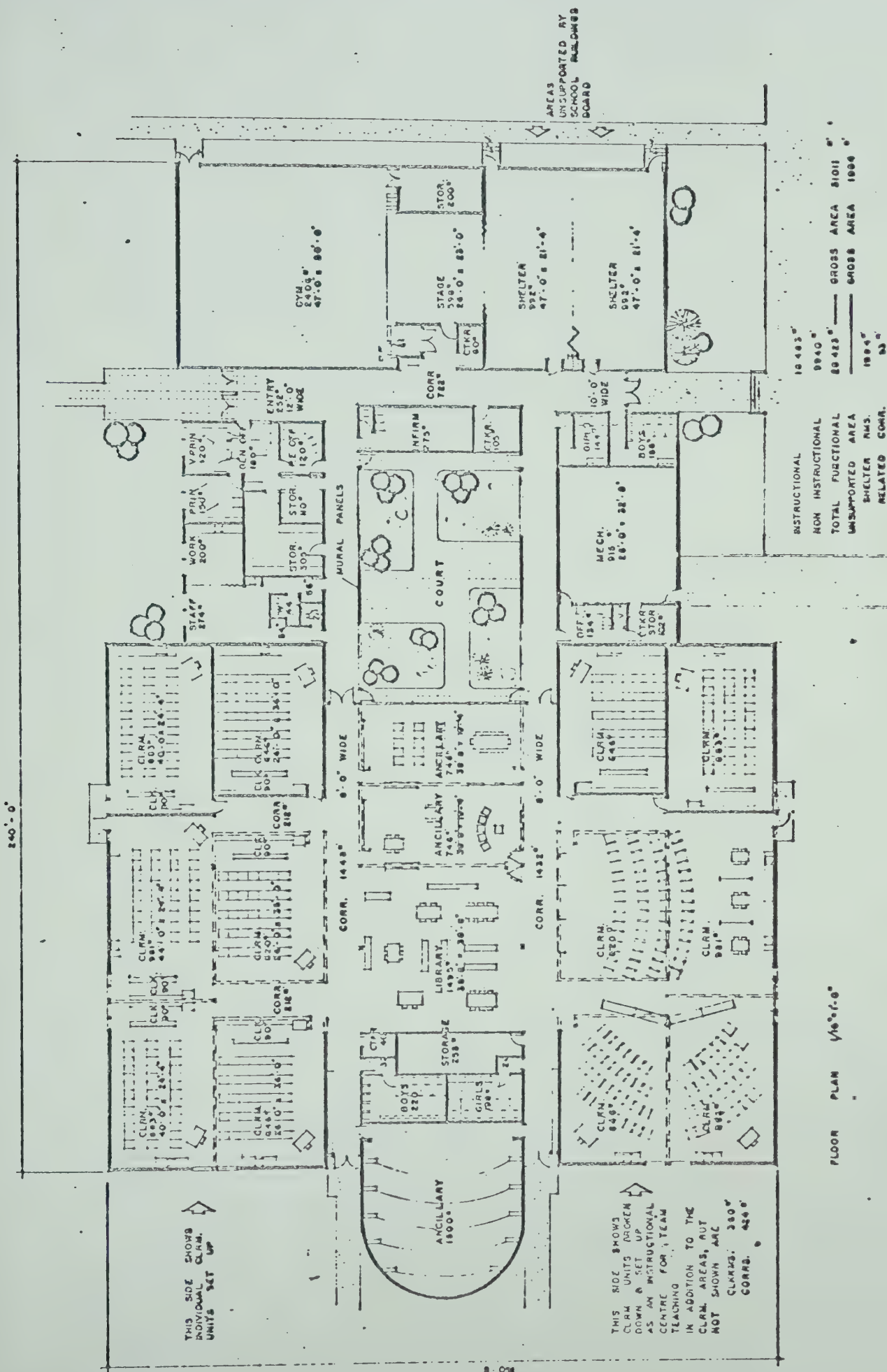
RECTANGULAR ORIGINAL DESINGS

USED IN THE PILOT STUDY

(PATRICIA HEIGHTS)

(LANSDOWNE)





240'-0"

THIS SIDE SHOWS
INDIVIDUAL CLRM.
UNITS SET UP

THIS SIDE SHOWS
CLRM. UNITS PACKED
DOWN & SET UP
AS AN INSTRUCTIONAL
CENTRE FOR A TEAM
TEACHING
IN ADDITION TO THE
CLRM. AREAS, BUT
CLRM. SHOWN ARE
NOT CLRM. 280'
CORR. 424'

FLOOR PLAN 1/16" = 1'-0"

PROPOSED LANSLOWNE ELEMENTARY SCHOOL

FOR THE
EDMONTON
SCHOOL
BOARD

ARCHITECT GROVES HODGSON
DESIGNED

ARCHITECTS
JOS. W. 027
MAY 1967

INSTRUCTIONAL	10 483'
NON INSTRUCTIONAL	9940'
TOTAL FUNCTIONAL	80 423'
UNSUPPORTED AREA	GROSS AREA 31011'
SHELTER RMS. RELATED CORR.	GROSS AREA 1894'
	53'

AREAS
UNSUPPORTED BY
SCHOOL BUILDING
BOARD

A P P E N D I X B

INFORMATION CHECKLIST

INFORMATION CHECKLIST: NAME OF SCHOOL _____

Number of Teachers in open area: _____ Number of classes in open area: _____
Type of Design of building: Rectangular _____ Circular _____
Pod _____ Addition _____

Number of 16 mm motion picture projectors: _____

LIGHTING CONTROLS:

Number of windows per teaching stations _____
Ventilators located close to window? Y N

Natural lighting controls: Pull down blinds _____ Venetian blinds _____
Blackout curtains _____ Venetian blinds _____
Operable: Y N Other _____ between glass _____

Number of light switches per teaching station _____
Lights controlled in banks? Y N

Number of banks controlled by one switch _____

Number of electric outlets per teaching station _____

Location of electric outlets: Floor _____ Wall _____ Other _____

ACOUSTIC CONTROLS:

Carpet? Y N Type of Floor: Solid _____ Hollow _____

Floor to ceiling moveable partitions? Y N

Number of moveable partitions per teaching area? _____

Walls materials: Concrete Blocks _____ Acoustic Tile _____

Ceiling materials: Acoustic Tile _____ Wood _____

Projection Room: Y N

Location of projection room in relation to open area: Adjacent _____
Distant _____

Light control: Blackout Drapes _____ Pull down blinds _____
Venetian Blinds _____ Venetian blinds between glass _____
Other _____

Number of electric outlets: _____ Location: Wall _____ Floor _____ Height _____

Acoustic Controls: Carpet _____ Wall Materials: Cement Blocks _____
Tile _____

Acoustic tile: Ceiling _____ Walls _____

Room originally planned and designed as a projection room? Y N

LIGHT CONTROL EVALUATION:

	Natural	Artificial
Complete	_____	_____
Partial	_____	_____
None	_____	_____

ACOUSTIC CONTROL EVALUATION:

Complete _____

Partial _____

DATE: _____

A P P E N D I X C

PILOT STUDY OPINION SURVEY

10527 - 129 Street
EDMONTON 40, Alberta

January 5, 1970

Dear Colleagues:

This survey has been constructed in an attempt to determine the consequences of school design for audio-visual media utilization. Items refer to using the 16 mm motion picture medium in the open area of your school. It is assumed that this medium is representative of most of the audiovisual media you may use in the open area in that it has a projected image which requires control of natural and artificial light and an audible sound track which requires acoustical control. Items may appear to be repetitive; however, they do differ slightly even when appearing to be the same. Please return your completed survey and answer sheet to your principal.

Thank you for your assistance in this research project. It is important that you as a teacher have an opportunity to evaluate the facility in which you teach. It is hoped this survey has, in some way, served this purpose.

Yours truly,

Brent Pickard

Please read these directions carefully:

1. Read each item carefully and indicate your immediate response by placing a black mark in the appropriate space on the answer sheet.
2. Please use an HB pencil.
3. A rating scale has been used. The numbers mean:

A-1 Strongly Agree
B-2 Agree
C-3 Disagree
D-4 Strongly Disagree
E-5 No Opinion
4. Please disregard any items that do not apply to your specific school design.

5. Please return both the survey and answer sheet to your principal when you have finished.
6. All information received is confidential.

For the purposes of this study, the following definitions have been used. Please refer to them at any time.

1. Natural Light: light from the sun that enters the teaching station through windows.
2. Dimmer Switches: a type of control that will lower or raise the illumination of incandescent and/or fluorescent lights (also termed rheostat controls).
3. Projection Room: a self contained room, originally designed for projection purposes and with adequate lighting and acoustic controls.
4. Teaching Station: a portion of the open area of an open area school that the teacher uses for small group, class size or large group instruction of students.
5. Self Contained Classroom: a classroom completely enclosed with walls in the conventional manner.
6. Adequate: equal to the teacher's personal requirements for satisfactory 16 mm motion picture presentation.

Part A: Teacher Information

Directions: Please indicate the appropriate answer by placing a check mark in the appropriate space. All information is confidential.

Years of Training:

1 _____ 3 _____ 5 _____ More than 6 _____
2 _____ 4 _____ 6 _____

Years of Teaching:

0 - 2 _____ 5 - 10 _____ 15 - 20 _____ More than 25 _____
2 - 5 _____ 10 - 15 _____ 20 - 25 _____

Years of Teaching in an Open area School:

0 - 2 _____ 2 - 5 _____ 5 - 10 _____

Years of Teaching in the Present School:

0 - 2 _____ 2 - 5 _____ 5 - 10 _____

Have you completed any audiovisual communications courses? Yes _____ No _____

If so, please indicate the courses you have completed:

Are you presently registered in any audiovisual communications courses?

Yes _____

No _____

If so, please indicated the courses you are attending:

Number of times per week on the average you use the 16 mm motion picture medium for instructional purposes:

0 _____ 5 - 10 _____
1 - 5 _____ More than ten times _____

Age:

18 - 20 _____ 26 - 30 _____ 36 - 40 _____ 45 - 60 _____

21 - 25 _____ 31 - 35 _____ 41 - 45 _____ 51 - 60 _____

Part B. School Design and 16 mm Motion Picture Presentation:

Directions: Place a black mark in the appropriate space on the answer sheet which best describes your opinion regarding each item. Disregard any items that do not apply to your specific open area school design. Please use an HB pencil and return the completed survey and answer sheet to your principal. A rating scale has been used and the numbers mean:

A-1	Strongly Agree
B-2	Agree
C-3	Disagree
D-4	Strongly Disagree
E-5	No Opinion

1. The present natural lighting controls (window covers) are adequate for darkening the teaching station for a 16 mm motion picture.
2. The present natural lighting controls (window covers) do not interfere with the ventilation of the teaching station.
3. Moveable partitions between teaching stations are adequate to control light from adjacent teaching stations while your teaching station is darkened for projection purposes.
4. Light switches are conveniently located in the open area for you or your students to operate.
5. Light from adjacent hallways affects the picture image.
6. Dimmer controls are conveniently located in the open area for you or your students to operate.
7. Electric light switches are adequately labeled as to which lights they control.
8. Light from adjacent teaching stations filtering into the darkened area interferes with the projected image of the 16 mm motion picture image.
9. For your practical purposes, lighting controls are adequate for 16 mm motion picture presentation.

10. Interior light switches are handy to operate.
11. Ventilation of the teaching station remains normal when blackout drapes or pull down blinds are covering the windows during a 16 mm motion picture presentation.
12. Fluorescent lighting, that filters into the darkened teaching station, provides adequate light for student note taking during a 16 mm motion picture.
13. Incandescent spot lights provide adequate indirect lighting for student note taking during 16 mm motion picture projection.
14. Lighting controls in the open area do not necessitate projecting a 16 mm motion picture in a self contained classroom.
15. The carpeting adequately reduces noise levels in the open area.
16. Moveable partitions adequate in controlling sound emanating from other teaching stations during a 16 mm motion picture presentation in your teaching station.
17. Acoustic controls have adequately reduced higher noise levels in the open area resulting from 16 mm motion picture projection.
18. Moveable partitions are adequate in controlling sound emanating from the soundtrack of a 16 mm motion picture.
19. Noise from adjacent teaching stations is controlled adequately for 16 mm motion picture presentation.
20. Sound emanating from the sound track of a 16 mm motion picture presentation in an adjacent teaching station is adequately controlled so that you can carry on your class activities in the normal manner.
21. The overall shape of the open area (rectangular, circular, etc.) improves the acoustics of the teaching station during a 16 mm motion picture presentation.
22. Acoustic controls in the open area do not necessitate projecting a 16 mm motion picture in a self contained classroom.
23. Acoustic ceiling tile aids in controlling sound during a 16 mm motion picture presentation.
24. Sound emanating from the sound track of a 16 mm motion picture does not echo or reverberate in the open area.

25. The existing acoustical controls are adequate for effective 16 mm motion picture presentation in your teaching station.
26. Sufficient electrical outlets have been supplied in your teaching station for your purposes.
27. The placement of the electrical outlets in the teaching station is convenient for your purposes.
28. The school timetable is organized so that classes normally adjacent to you will be in other areas of the school (e.g. gymnasium) during a 16 mm motion picture presentation in your teaching station.
29. Since controls for light and sound are adequate for 16 mm motion picture presentation in your teaching station, you seldom use a self contained classroom for this purpose.
30. The school timetable is organized so that two or more classes taking the same subject can be combined in one teaching station for large group presentation of a 16 mm motion picture.
31. Moveable floor to ceiling, opaque partitions between teaching stations would be adequate to control light and sound during a 16 mm motion picture presentation.
32. Some type of listening center device should be built in to the open area of your school, so that students can listen to the soundtrack without having it disturb other classes.
33. More flexibility should have been built into the electric light switch controls in the open area of your school.
34. Permanent two or three foot partitions, hanging from the ceiling between teaching stations would aid in controlling light that filters into the darkened area from adjacent teaching stations or from the hallway.
35. A projection room, where lighting and sound can be completely controlled, is necessary in open area schools.
36. Dimming controls on lights are necessary if students are expected to take notes during a 16 mm motion picture presentation.
37. If Venetian blinds, built between two panes of glass with an accessible control knob for opening and closing had been used in your school, adequate control of natural light would result.

38. Opaque, floor to ceiling, fireproof and sound absorbing curtains, that could be drawn around your teaching station during a 16 mm motion picture presentation would control light and sound more adequately than at present.
39. Better quality acoustic materials should have been used in the construction of your teaching station.
40. Acoustic tile should be placed on bare walls.
41. You can project a 16 mm motion picture, whenever it is educationally justified, at your teaching station.
42. The 16 mm motion picture projector is a valuable medium in your teaching method.
43. The 16 mm motion picture medium is representative of the majority of the audio visual media you use in the open area school.

COMMENTS: Please feel free to list any comments you believe to be pertinent below. Return this survey and the answer sheet to your principal when you are finished. Thank you for your cooperation.

A P P E N D I X D

MAIN STUDY SURVEY

Part I. School Design and 16 mm Motion Picture Presentation:

DIRECTIONS:

1. Begin this part of the survey by making your first response at Item one of Part I on the answer sheet.
2. Reach each item carefully and indicate your immediate response by placing a black mark in the appropriate space on the answer sheet.
3. Place only one response per item.
4. Please use an HB pencil.
5. A rating scale has been used. The numbers mean:

A-1	Strongly Agree
B-2	Agree
C-3	Disagree
D-4	Strongly Disagree
E-5	No Opinion
6. Some items may not apply to your specific school design. In such cases please respond by placing a black mark in space E-5 - No Opinion.
7. Please return both the survey and answer sheet to your principal when you have finished. All surveys and answer sheets will be called for on Friday, February 13, 1970.
8. All information received will be used as part of a thesis and is confidential to the extent that names of schools or teachers will not be used.

Definitions of Terms Used:

For the purposes of this study, the following definitions have been used. Please refer to them at any time.

1. Natural Light: Light from the sun that enters the teaching area or station through windows.
2. Dimmer Switches: A type of control that will lower or raise the illumination of incandescent and/or fluorescent lights (also called rheostat controls).
3. Projection Room: A self contained room, originally designed for projection purposes and with adequate lighting and acoustic controls.
4. Teaching Station: A portion of the open area of an open area school that the teacher uses for small group, class size or large group instruction of students.
5. Self Contained Classroom: A classroom completely enclosed with walls in the conventional manner.
6. Adequate: Equal to the teacher's personal requirements for satisfactory 16 mm motion picture presentation.

1. The present natural lighting controls (window covers) are adequate for darkening the teaching station for 16 mm motion picture presentation.
2. The present natural lighting controls (window covers) do not interfere with the ventilation of the teaching station.
3. Moveable partitions between teaching stations are adequate to control light from adjacent teaching stations while your teaching station is darkened for projection purposes.
4. Light switches are conveniently located in the open area for you or your students to operate.
5. Light from adjacent hallways affects the picture image.
6. Electric light switches are adequately labelled as to which lights they control.
7. You can switch off lights to darken your teaching area without interfering with the lights in an adjacent teaching station.
8. Light from adjacent teaching stations filtering into your darkened area does not interfere with the projected image of a 16 mm motion picture.
9. Interior light switches are handy to operate.
10. Ventilation of the teaching station remains normal when blackout drapes or pull down blinds are covering the windows during a 16 mm motion picture presentation.
11. Fluorescent lighting, that filters into the darkened teaching station, provides adequate light for student note taking during a 16 mm motion picture.
12. Incandescent spot lights provide adequate indirect lighting for student notetaking.
13. Lighting controls in the open area do not necessitate projecting a 16 mm motion picture in a self contained classroom.
14. For your practical purposes, lighting controls and acoustical controls are adequate for 16 mm motion picture presentation in the open area.
15. The carpeting adequately reduces noise levels in the open area.

16. Moveable partitions are adequate in controlling sound emanating from other teaching stations during a 16 mm motion picture presentation in your teaching station.
17. Acoustic controls have adequately reduced higher noise levels in the open area resulting from 16 mm motion picture presentations.
18. Moveable partitions are adequate in controlling sound emanating from the sound track of a 16 mm motion picture.
19. Noise from adjacent teaching stations is controlled adequately for 16 mm motion picture presentation in your teaching station.
20. Acoustic controls in the open area do not necessitate projecting a 16 mm motion picture in a self contained classroom.
21. Sound emanating from the sound track of a 16 mm motion picture presentation in an adjacent teaching station is adequately controlled so that you can carry on your class activities in the normal manner.
22. The overall shape of the open area (circular, rectangular, etc.) improves the acoustics of the teaching station during a 16 mm motion picture.
23. Acoustic ceiling tile aids in controlling sound during a 16 mm motion picture presentation.
24. Sound emanating from the sound track of a 16 mm motion picture does not echo or reverberate in the open area.
25. The existing acoustical controls are adequate for effective 16 mm motion picture presentation in your teaching station.
26. Sufficient electric outlets have been supplied in your teaching station for your purposes.
27. The placement of the electric outlets in the teaching station is convenient for your purposes.
28. The school timetable is organized so that classes normally adjacent to your class will be in other areas of the school (e.g. gymnasium) during a 16 mm motion picture presentation in your teaching station.

29. The school timetable is organized so that two or more classes taking the same subject can be combined in the teaching station for large group presentation of a 16 mm motion picture.
30. Since controls for light and sound are adequate for 16 mm motion picture presentation in your teaching station, you seldomly use a self contained classroom for this purpose.
31. Moveable floor to ceiling, opaque partitions between teaching stations would be adequate to control light and sound during a 16 mm motion picture presentation.
32. Some type of listening center device should be built into the open area of your school so that students can listen to the sound track without having it disturb other classes.
33. More flexibility should have been built into the electric light switch controls in the open area of your school.
34. Permanent two or three foot partitions, hanging from the ceiling between teaching stations, would aid in controlling light that filters into the darkened area from adjacent teaching stations or from the hallway.
35. A projection room, where lighting and sound can be completely controlled, is necessary in open area schools.
36. Dimming controls on lights are necessary if students are expected to take notes during a 16 mm motion picture presentation.
37. If Venetian blinds, built between two panes of glass with an accessible control knob for opening and closing had been used in your school, better control of natural light would result.
38. Opaque, floor to ceiling, fireproof and sound absorbing curtains, that could be drawn around your teaching station during a 16 mm motion picture presentation would control light and sound more adequately than at present.
39. Better quality acoustic materials should have been used in the construction of your teaching station.

40. Acoustic tile should be placed on bare walls.
41. You can project a 16 mm motion picture, whenever it is educationally justified, at your teaching station.
42. The 16 mm motion picture projector is a valuable medium in your teaching method.
43. The 16 mm motion picture medium is representative of the majority of the audio-visual media you use in the open area.
44. Audio-visual media, when utilized correctly, facilitates learning in a school environment.
45. It is important that teachers have an opportunity to evaluate the physical facilities in which they teach.

Part II: Teaching Information:

DIRECTIONS:

1. Begin Part II of the survey by making your first response at question 1 of Part II on the answer sheet.
2. Indicate your response as you did in Part I.

1. Years of Training:

- | | | | |
|------|---------|------|-------------------|
| A-1. | 1 year | F-6. | 6 years |
| B-2. | 2 years | G-7. | More than 6 years |
| C-3. | 3 years | | |
| D-4. | 4 years | | |
| E-5. | 5 years | | |

2. Years of Teaching:

- | | | | |
|------|---------------|------|--------------------|
| A-1. | 0 - 2 years | E-5. | 15 - 20 years |
| B-2. | 2 - 5 years | F-6. | 20 - 25 years |
| C-3. | 5 - 10 years | G-7. | More than 25 years |
| D-4. | 10 - 15 years | | |

3. Years of Teaching in an Open Area School:

- | | |
|------|--------------|
| A-1. | 0 - 2 years |
| B-2. | 2 - 5 years |
| C-3. | 5 - 10 years |

4. Years of Teaching in the Present School:

- A-1. 0 - 2 years
- B-2. 2 - 5 years
- C-3. 5 - 10 years

5. Have you completed any audio-visual communications courses?

- A-1. Yes
- B-2. No

6. Are you presently registered in any audio-visual communications courses?

- A-1. Yes
- B-2. No

7. Number of times per week, on the average, you use the 16 mm motion picture medium in the open area for instructional purposes:

- | | | | |
|------|-------------|------|---------------------|
| A-1. | Not at all | C-3. | 5 - 10 times |
| B-2. | 1 - 5 times | D-4. | More than ten times |

8. Age:

- | | | | |
|------|---------|------|---------|
| A-1. | 18 - 20 | E-5. | 36 - 40 |
| B-2. | 21 - 25 | F-6. | 41 - 45 |
| C-3. | 26 - 30 | G-7. | 46 - 50 |
| D-4. | 31 - 35 | H-8. | 51 - 60 |

9. The open area you presently teach in is:

- A-1. basically rectangular in shape
- B-2. basically circular in shape

10. The Open area you presently teach in is:

- A-1. an addition to a traditional school
- B-2. not an addition to a traditional school

COMMENTS: Please feel free to list any comments you believe to be pertinent in the space below. Return this questionnaire and the answer sheet to your principal when you are finished. Thank you for your cooperation.

A P P E N D I X E

LETTER FROM THE EDMONTON PUBLIC SCHOOL BOARD
GRANTING APPROVAL FOR THE RESEARCH PROJECT

EDMONTON PUBLIC SCHOOL BOARD

December 18, 1969

Dr. L. D. Stewart
Executive Secretary
Laboratory Program Committee
University of Alberta
EDMONTON 7, Alberta

Dear Dr. Stewart:

Re: Research Request - Brent W. Pickard

Following discussion with the Director of Educational Facilities and the Audio Visual Supervisor, this project has been approved on the usual permissive basis. The schools requested have been contacted and, all except one have agreed to let Mr. Pickard visit the schools between now and December 23.

It is our intention to have him distribute this letter to the principals as he makes his visit to each, in view of the uncertainty of the mail at this time of year.

Yours sincerely,

E. A. Mansfield, Ph.D.,
DIRECTOR - EDUCATIONAL
RESEARCH

EAM/ak

Encl.

cc B. W. Pickard
N. Spillios
D. Cooney
principals of schools concerned

A P P E N D I X F

COVERING LETTER TO SCHOOL
PRINCIPALS

10527 - 129 Street
EDMONTON 40, Alberta

February 3, 1970

To the Principal of Participating Schools:

Dear Sir:

As you know, I am attempting to determine the consequences of school design for audio-visual media utilization. Part of this research involves the teachers teaching in the open area of your school and their participation in completing the enclosed opinion survey.

All information obtained will be used as part of my thesis and will be confidential in that names of schools or teachers will not be used. Would you please distribute the surveys and answer sheets to the teachers teaching in the open area of your school? The number of surveys you have received is based upon a figure I obtained during a visit to your school in late December, 1969. If more answer sheets or surveys are required you may contact me at the telephone number below and they will be brought out to your school.

I greatly appreciate your assistance and time taken in distributing this instrument to your staff and ensuring that they return it and the completed answer sheet to your office. It is most important that I receive a completed answer sheet from each teacher in the open area.

On Friday, February 13, 1970, I will call for the completed survey and answer sheets. An envelope has been provided for your convenience.

Thank you for your cooperation without which this research project could not be conducted.

Yours truly,

Brent Pickard

BWP/cc
Enclosures

Telephone Number if more answer sheets or surveys are needed:
Audio Visual Media Center - Education Building, 432-3667
(Note: Please find attached, previous correspondence from the
Central Office regarding approval of this project).

A P P E N D I X G

COVERING LETTER TO PARTICIPATING
TEACHERS

10527 - 129 Street
EDMONTON 40, Alberta

February 3, 1970

To the Teachers of Participating Schools:

Dear Colleague:

This opinion survey has been constructed in an attempt to determine the consequences of school design for audio-visual media utilization. Items refer to using the 16 mm motion picture medium in the open area of your school. It is assumed that this medium is representative of most of the audio-visual media you may use in the open area in that it has a projected image which requires control of natural and artificial light and an audible sound track which require acoustical control.

Items may appear to be repetitive; however, they do differ slightly even when appearing to be the same. The survey contains two parts. Directions for completing the answer sheet are given on page 1.

The completed surveys and answer sheets must be completed and returned to your principal by February 13, 1970. On this date a call will be made to your school to pick up all the surveys. Each reply is significant to this study. The value of the study and consideration given to any of its recommendations will depend directly upon the percentage of returns received. Your cooperation is vital and certainly appreciated.

Thank you for your assistance in this research project. It is important that you as a teacher have an opportunity to evaluate the facility in which you teach. It is hoped the survey has, in some way, served this purpose.

Yours truly,

Brent Pickard

BWP/cc
Enclosures

A P P E N D I X H

REMINDER LETTER TO SCHOOL PRINCIPALS

February 9, 1970

To Principals of Participating Schools

Dear Sir:

Recently you received a group of surveys designed to determine the consequences for audio-visual utilization of some selected factors of open area school design. The data from these surveys will be used as part of a research project.

It is vital to the success of this research that all surveys be completed. Arrangements have been made to have the completed surveys picked up at your school sometime during February 13, 1970. I hope that the surveys from your school will be ready to be picked up on Friday.

Thank you very much for your cooperation in this matter.

Yours truly,

Brent Pickard

BWP/cc

B29941